

# JVC

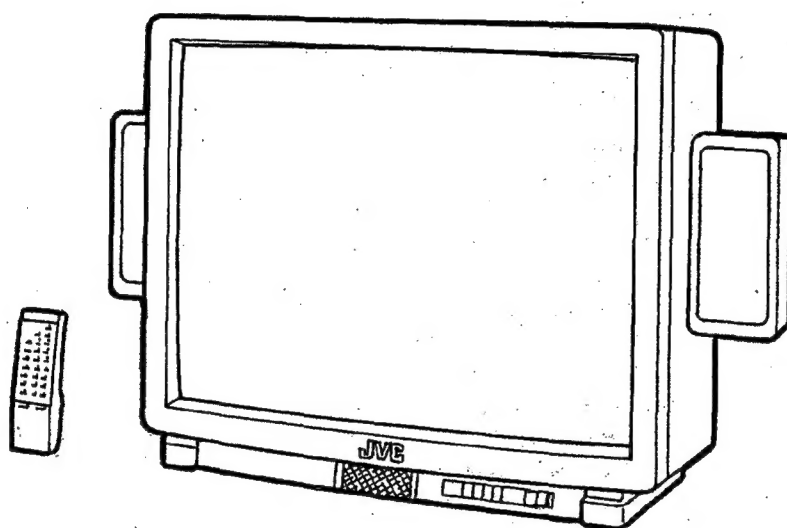
## SERVICE MANUAL

### 35" COLOR MONITOR / RECEIVER

# AV-3590S<sub>(us)</sub>

BASIC CHASSIS

GZII



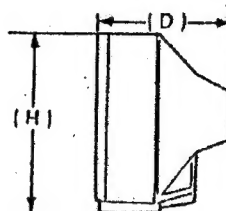
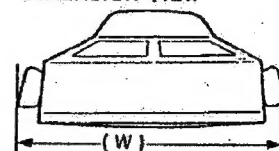
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# SPECIFICATIONS

Item	Content
Dimensions	114.1cm (W) × 60.5cm (D) × 74.8cm (H)
Weight	88.1kg
TV System and Color system	
TV RF System	CCIR (M)
Color System	NTSC, BTSC (Multichannel Sound)
TV Receiving Channels and Frequency	
VL Band	(02 ~ 06) 54MHz ~ 88MHz
VH Band	(07 ~ 13) 174MHz ~ 216MHz
UHF Band	(14 ~ 69) 470MHz ~ 806MHz
CATV Receiving Channels and Frequency (Quartz Synthesizer system)	
Low Band	(02 ~ 06) by (02 ~ 06)
High Band	(07 ~ 13) by (07 ~ 13)
Mid Band	(A ~ I) by (14 ~ 22)
Super Band	(J ~ W) by (23 ~ 36)
Hyper Band	(W + 1 ~ W + 28) by (37 ~ 64)
ULTRA Band	(W + 29 ~ W + 84) by (65 ~ 125)
Sub Mid Band	(A8, A4 ~ A1) by (01, 96 ~ 99)
TV/CATV Total Channel	180 Channels
Intermediate Frequency	
Video IF Carrier	45.75MHz
Sound IF Carrier	41.25MHz (4.5MHz)
Color Sub Carrier	3.58MHz
Antenna Input Impedance	75Ω UHF VHF in common (F-Type) × 2
Power Input	120V AC, 60Hz
Power Consumption	218W (max.), 163W (avg.)
Picture Tube	35" In-Line Type Full-Square Tube
Viewable Picture Size	71.8cm (W) × 54.1cm (H)
High Voltage	34.0kV ± 1.5kV (at zero beam current)
Speaker	10cm Round Type, bass-reflex × 2 5 × 12cm oval Type, Center × 1
Speaker Terminal	6 ~ 8Ω
Surround SP Terminal	6 ~ 8Ω
Audio Power Output	38W (total) (8W × 2 front, 8W × 2 rear, 6W Center)
Video External Input (RCA pin Jack)	1 Vp-p 75Ω
Audio External Input (RCA pin Jack)	500mV rms (-4dBs), High Impedance
Video Line Output (RCA pin Jack)	1 Vp-p 75Ω
Audio Line Output (RCA pin Jack)	500mV rms (-4dBs), Low Impedance (400Hz, 100% modu.)
S-video in (4 pin)	Y: 1 Vp-p Positive, 75Ω (negative sync. provided) C: 0.286 Vp-p (burst signal), 75Ω
Variable Audio Output (RCA pin Jack)	More than 0 ~ 1550mV rms (+6Bs) Low Impedance (400Hz, 100% modu.)
Tube	1
IC	63 (In TV), 2 (In Remocon)
Transistor	164 (In TV), 4 (In Remocon)

DIMENSION VIEW



(54MHz ~ 804MHz)

*Design & specification subject to change without notice.*

## NOTICE

## SAFETY PRECAUTIONS

## REPLACING THE PICTURE TUBE FOR AV-3590S

- Model AV-3590S uses two types of PICTURE TUBE, equipped with a Deflection Yoke (DY) matching each PICTURE TUBE. In order to maintain the electrical performance, it is very important to properly combine the PICTURE TUBE and DY.
- When conducting replacement repair service for the PICTURE TUBE or DY, make confirmation beforehand that combinations of PICTURE TUBE type No. and DY type No. are as shown in the table below.
- An incorrect combination may result in a failure to maintain electrical performance. Be careful.

## COMBINATION PARTS NUMBER LIST ( PICTURE TUBE &amp; DY)

Type	Picture Tube No.	DY No.	Remarks
A	M89KCW31X-KD	CE20195-00A-KD	
B	M89KCW11X-KD	CE20164-00A-KD	

- For replacement of PICTURE TUBE see pages 26 to 29 of SERVICE MANUAL (No.50431).
- When ordering any repair part, be sure to make confirmation of PICTURE TUBE and DY combinations. Also, refer to pages 47 to 51 of SERVICE MANUAL (No. 50431).

## FEATURES

- New chassis design enables use of a main board with simplified circuitry.
- Comb filter improved picture quality.
- DIGITAL COMMAND Ai remote control with multi-color on-screen "Menu" display, allowing interactive, total TV operation, and with LEARNING function for operating other AV-related components. Also, this TV features various digital functions, including Picture-In-Picture function, which can be operated with this Remote Control unit.
- Provided with miniature tuner (TV / CATV)
- SURROUND SPEAKER terminals for listening to the DOLBY SURROUND\* and SPATIAL SURROUND sounds which reproduce full concert-hall presence.
- Full-square CRT (cathode ray tube) reproduces fine textured picture in every detail.
- PLL synthesizer system TV / CATV totaling 180 channels.
- The AV input terminal, sound input, external speaker output terminal, and audio output terminal allow for a variety of connections to another AV equipment.
- S-VIDEO input terminal for taking best advantage of Super VHS (including a bridge-connection).
- Variable audio output terminal.
- Built-in MTS & SURROUND circuit with A / V system.

\* Manufactured under license from Dolby Laboratories Licensing Corporation. Additionally licensed under one or more of the following patents :U.S. numbers 3,632,886, 3,746,792 and 3,959,590 ; Canada numbers 1,004,603 and 1,037,877. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

# SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. Electrical components having such features are identified by shading on the schematics and by (⚡) on the parts list in Service manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may create shock, fire, or other hazards.
4. Use isolation transformer when hot chassis.
 

The chassis and any sub-chassis contained in some products are connected to one side of the AC power line. An isolation transformer of adequate capacity should be inserted between the product and the AC power supply point while performing any service on some products when the HOT chassis is exposed.
5. Don't short between the LIVE side ground and NEUTRAL side grounding or EARTH side ground when repairing.
 

Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE (⏏) side GND, the NEUTRAL (⏏) side GND and EARTH (⏏) side GND. Don't short between the LIVE side GND and NEUTRAL side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and NEUTRAL side GND or EARTH side GND at the same time.

If above note will not be kept, a fuse or any parts will be broken.
6. If any repair has been made to the chassis, it is recommended that the B<sub>1</sub> setting should be checked or adjusted (See ADJUSTMENT OF B<sub>1</sub> POWER SUPPLY).
7. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
8. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.
9. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
10. Isolation Check  
(Safety for Electrical Shock Hazard)  
After re-assembling the product, always perform an isolation check

on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

## (1) Dielectric Strength Test

The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1100V AC (r.m.s.) for a period of one second.

(... Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)

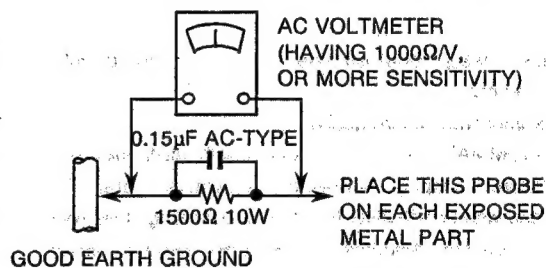
This method of test requires a test equipment not generally found in the service trade.

## (2) Leakage Current Check

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

### • Alternate Check Method

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check). Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).



## 11. High voltage hold down circuit check.

After repair of the high voltage hold down circuit, this circuit shall be checked to operate correctly.

See item "How to check the high voltage hold down circuit".

## ■ ONLY CANADA

This mark shows a fast operating fuse, the letters indicated below show the rating.





# OPERATING INSTRUCTIONS

## BEFORE YOU CALL FOR SERVICE

Be sure to review all the instructions written in this booklet. Then try to check according to the following chart.

PROBLEMS	TRY THIS	IF OK, station broadcasters and check the A.C. outlet. (Check antenna connections and try another channel. If OK, station broadcasters and check the A.C. outlet.)	IF NO, check antenna in different direction. Is it a black-and-white program?	Adjust COLOR control. Adjust TINT control. Replace batteries of remote control unit.	THEN CALL FOR SERVICE PERSONNEL. Be sure to disconnect the power plug, and never try to service the TV yourself.
Picture rolls vertically.		NO			
Noise bars on screen.		NO			
Picture blurred.		NO			
Lines or streaks in picture.		NO			
Weak picture.		NO			
Wrong colors.		NO			
No color.		NO			
Sound OK but picture poor.		NO			
Picture OK but sound poor.		NO			
Neither picture nor sound.		NO			
Sound OK but no picture.		NO			
Weak or inoperable remote control.		NO			

**Important:**  
An outdoor antenna system of good quality and condition is recommended to eliminate many service problems.

First, press the POWER button on the front panel to switch the TV on and off, then check whether the Remote Control is working or not.

## SPECIFICATIONS

Type	Color monitor/receiver	Variable audio output	More than 0 — 1550 mV rms
Reception system	NTSC system, BTSC system (Multichannel sound)	connectors	(+6 dBs), low impedance (400 Hz when modulated 100%)
Channel coverage	VHF 2 — 13, UHF 14 — 69; Sub-bands (180-channel frequency synthesizer system)	External speaker terminals	Impedance 6 to 8 ohms
Power requirement	Mid, Mid, Super, Hyper and Ultra	External dimensions (W x H x D)	34-1/4" x 25-1/2" x 23-7/8" (except for speakers)
Power consumption	AC 120 V, 60 Hz	Weight	193.8 lbs (including speakers)
Screen size	Max. 218 W, Avg. 163 W	Accessories	Remote Control unit (RM-C954)
Audio output	35" diagonally measured, Full Square		AAA-size alkaline dry-cell battery x 2
Speakers	EXT SPKR: 8 W + 8 W, SURROUND SPKR: 8 W + 8 W, CENTER SPKR: 6 W		
Antenna input terminals	5 x 12 cm oval x 1 (Center)		
External input connectors (INPUT 1, INPUT 2)	75 ohms, unbalanced (VHF/UHF) (F-type connector) x 2		
Line output connectors	Video/1 Vp-p, 75 ohms		
	Audio/500 mV rms (-4 dBs), high impedance		
	Video/1 Vp-p, 75 ohms		
	Audio/500 mV rms (-4 dBs), low impedance (400 Hz when modulated 100%)		

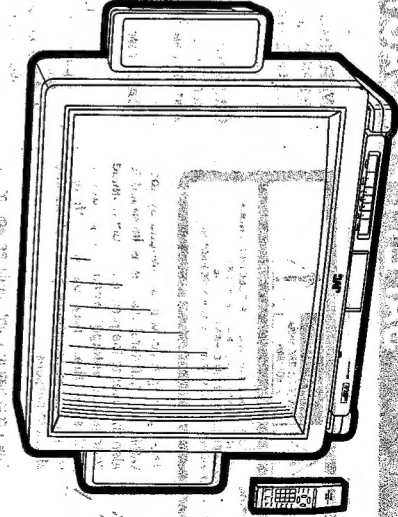
Design and specifications subject to change without notice.

**S-VIDEO IN connectors** : 1/1 Vp-p positive, 75 ohms (negative sync provided)  
C/I 0.286 Vp-p (burst signal) 75 ohms

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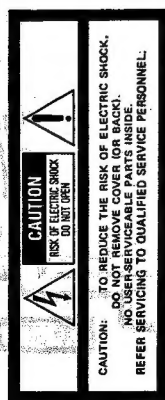
## INSTRUCTIONS AV-3590S COLOR MONITOR/RECEIVER

DOLBY SURROUND  
DIGITAL COMMAND AI



For Customer Use:  
Enter below the Serial No. which is located on the rear of the cabinet. Retain this information for future reference.  
Model No. AV-3590S  
Serial No.

## SAFETY PRECAUTION



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

### WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS TV SET TO RAIN OR MOISTURE.

### Caution:

Changes or modifications not approved by JVC could void the user's authority to operate the equipment.

**CAUTION: TO INSURE PERSONAL SAFETY, OBSERVE THE FOLLOWING RULES REGARDING THE USE OF THIS UNIT.**

1. Operate only from the power source specified on the unit.
2. Avoid damaging the AC plug and power cord.
3. Avoid improper installation and never position the unit where good ventilation is unobtainable.
4. Do not allow objects or liquid into the cabinet openings.
5. In the event of trouble, unplug the unit and call a service technician. Do not attempt to repair it yourself or remove the rear cover.

### Caution:

When you do not use this TV set for a long period of time, be sure to disconnect the power plug from the AC outlet for your safety. If the TV set is plugged into an AC outlet, a small amount of current is applied to the TV set even if the TV set's power is turned off.

Thank you for purchasing a JVC color monitor/receiver (TV). To ensure your complete understanding, please read all instructions in this booklet before operation.

### FEATURES

- 35-inch FS (Full-Square) picture tube.
- Comb filter for improved picture quality.
- 180-Channel cable-compatible frequency synthesizer tuner with built-in MTS decoder.
- Video Noise Reduction circuitry to eliminate on-screen picture noise.
- Notch filter for preventing dot-interference at picture edges.
- S-VIDEO input terminal for taking best advantage of Super VHS (including a bridge-connection).
- Video/audio input, line output and variable audio output terminals to connect external components. (INPUT 1 is included with a bridge-connection.)
- SURROUND, SPEAKER terminals for listening to the DOLBY SURROUND and SPATIAL SURROUND sounds which reproduce full concert-hall presence.
- DIGITAL COMMAND AI remote control with multi-color on-screen "Menu" display, allowing interactive, total TV operation, and with LEARNING function for operating other AV-related components. Also, this TV features various digital functions, including Picture-In-Picture function, which can be operated with this Remote Control unit.

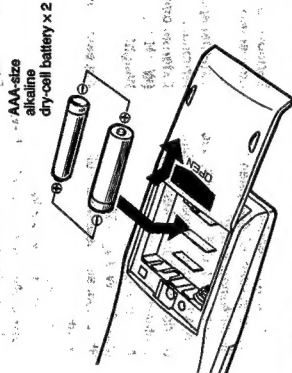
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## FIRST PREPARATIONS

1. Connect an antenna. (See page 30.)
2. Connect and install the provided speakers. (See page 31.)
3. Connect the purity by changing TV's facing direction. (See page 30.)
4. Insert batteries into the Remote Control unit.

- 1) Press the portion of remote control's rear cover, then slide in the direction of the arrow to remove the cover.
- 2) Correctly install the batteries, observing (+/-) polarities as shown.
- 3) Replace the cover.



## BASIC USE OF REMOTE CONTROL UNIT

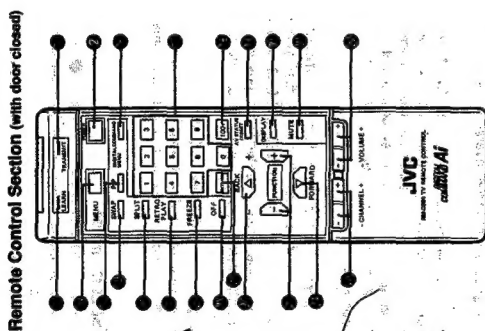
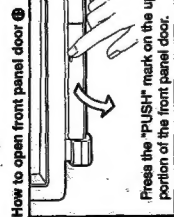
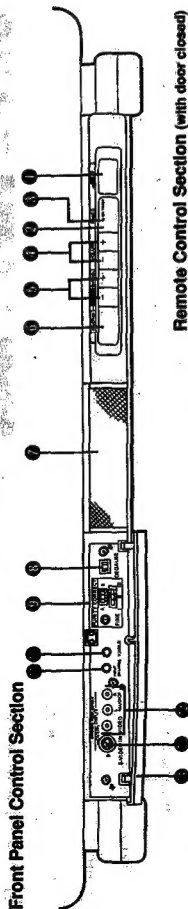
### Correct Use

- Point to Remote Control sensor ① of the TV set.
- The maximum operable distance is approximately 23 ft from the Remote Control sensor, and no more than 30° to either side of center.
- Operation of the Remote Control is most effective when there is nothing between it and the Remote Control sensor.
- Duration of the batteries is approximately 6 months to 1 year (duration varies depending on frequency of use). Replace the batteries when the remote operation becomes unstable. Use alkaline dry-cell batteries.
- When using the buttons on the door ② of the Remote Control unit, be sure to shut the door before pressing the buttons.
- TRANSMIT indicator ③ lights when pressing the buttons. However, this indicator does not light when pressing LEARNING button ④ or ⑤ if that button has not been programmed with data. If the TRANSMIT indicator does not light after pressing buttons which have been programmed with data, it shows that the batteries are becoming too weak. Replace the batteries as soon as possible.
- The DIGITAL COMMAND AI Remote Control operation does not function when programming buttons in the Learning mode (i.e., when LEARN indicator ⑥ is lit).

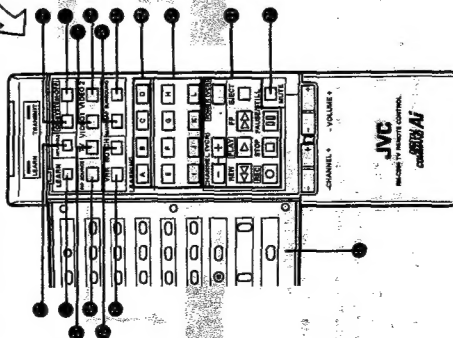
### Notes

- Do not use a combination of old and new batteries or batteries of different types.
- If batteries become exhausted, remove and replace them soon.
- If Remote Control will not be used for more than 2 weeks, remove batteries.
- When battery leakage occurs, clean the battery compartment with a soft cloth and replace the batteries.

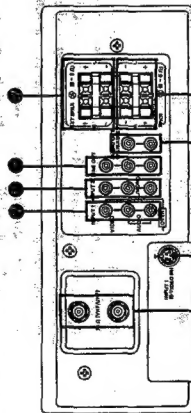
## CONTROLS AND THEIR LOCATIONS



Remote Control Section (with door opened)



Rear Panel Control Section



- 1 Remote Control sensor
- 2 POWER button
- 3 POWER/TIMER indicator
- 4 VOLUME (+/-) buttons
- 5 LEVEL/CHANNEL (+/-) buttons
- 6 FUNCTION button
- 7 Center speaker
- 8 DEGAUSS button
- 9 PURITY CORRECT button
- 10 Vertical hold knob
- 11 INPUT BALANCE knob
- 12 INPUT 1 connectors
- 13 S-VIDEO IN connector
- 14 TRANSMIT Indicator
- 15 Front panel door
- 16 MENU button
- 17 10-Digit keypad
- 18 100+ button
- 19 AV STATUS/RESET button
- 20 DISPLAY button
- 21 VOLUME (+/-) button
- 22 CHANNEL (+/-) button
- 23 FUNCTION FORWARD button
- 24 FUNCTION BACK button
- 25 RETURN button
- 26 PIP OFF button
- 27 FREEZE button
- 28 RETRO PLAY button
- 29 SPLIT button
- 30 VNR (Video Noise Reduction) button
- 31 NOTCH button
- 32 PIP SOURCE button
- 33 TV button
- 34 LEARN button
- 35 ANT/CABLE button
- 36 SYSTEM ON button
- 37 VIDEO 1 button
- 38 MAIN/SAP button
- 39 SURROUND button
- 40 AUDIO OUT (VARIABLE) connectors
- 41 LINE OUT connectors
- 42 INPUT 2 connectors
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## TV BASIC OPERATION

### Basic Operating Procedure

- 1 Press POWER button ① on either the Remote Control or front panel. POWER/TIMER indicator ② lights. Press this button again to turn the power off.

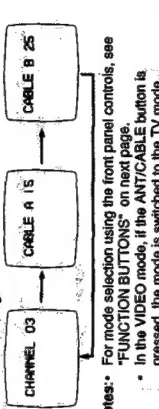
Note: If the POWER/TIMER indicator remains lit even after the power is turned off, it shows the DUAL ON TIMER is in operation. See "DUAL ON TIMER" on page 10 and "HOME SITTER" on page 9.

- 2 Press TV button ③ on the Remote Control to select the TV mode.

Note: For mode selection using the front panel controls, see "FUNCTION BUTTONS" on next page.

- 3 Press ANT/CABLE button ④ on the Remote Control to select the broadcast mode. Each time it is pressed, the mode is switched among "CHANNEL", "CABLE A" and "CABLE B".

When connected to an antenna, select "CHANNEL" mode for normal VHF/UHF reception. When connected to a non-scrambled cable TV system, select "CABLE A" mode. And when connected to a scrambled cable TV system via an additional converter, select "CABLE B" mode. (For connection to a converter, see "ANTENNA/CABLE TV CONNECTIONS" on page 30.) The on-screen display will show the following:



Notes: For mode selection using the front panel controls, see "FUNCTION BUTTONS" on next page.

In the VIDEO mode, if the ANT/CABLE button is pressed, the mode is switched to the TV mode.

- 4 Select desired channel using CHANNEL (+/-) button ⑤ on the Remote Control (or LEVEL/CHANNEL (+/-) buttons ⑥ on the front panel). Pressing the (+) button (side) advances to higher channels, (-) button (side) to lower channels.

Note: Certain channels have been preset at the factory. It may be necessary to add or erase some channels in your areas. See "9. INITIAL SET-UP" on page 13 for presetting channels.

- Channels can be selected directly by using 10-digit keypad ⑦ on the Remote Control. For example, if you select Channel 5, press "0" first, then press "5". (Be sure to press "0" first, before

pressing "5" for Channel 5.) For cable channels of 3-digit numbers, use 100+ button ⑧. For example, if selecting Channel 120, press the 100+ button first, then press "2", then "0". Also refer to the "CABLE TV CHANNEL CONVERSION CHART" below.

Note: When a video source such as a VCR is connected to the antenna terminal to be viewed on Channel 3 (or Channel 4), sometimes channel selection may result in an unclear or distorted picture. In this case, re-select Channel 3 (or 4) and the picture will become clear. (Also in this case, be sure to press "0" first, before pressing "3" (or "4") for Channel 3 (or Channel 4).)

- 5 Press VOLUME (+/-) button(s) ⑨ on either the Remote Control ⑩ or front panel ⑪ to adjust volume to your desired listening level. Pressing the (+) button (side) will increase sound volume, the (-) button (side) will decrease sound volume. The volume level is indicated on the screen by reference numbers (0 — 50) and by a bar scale as shown.



Note: The volume level can be muted instantly by pressing MUTE button ⑫ on the Remote Control. See "MUTE Button" on page 20. Also, a mute level setting is possible. See "7. SET MUTE LEVEL" of "9. INITIAL SET-UP" on page 16.

### On-Screen Display

- Once the on-screen display appears on the screen, it disappears in a few seconds. (Only the clock time can be kept displayed on the screen. See "DISPLAY Button" on page 20.)
- When tuned to a channel where no program is being broadcast, the on-screen display may be unclear or blurred.
- On-screen displays are available in two different layouts (except for displays of the channel number and clock time). See "6. MESSAGE STYLE" of "9. INITIAL SET-UP" on page 15 for selecting the display mode.
- Channel numbers of the "CATEGORY PREVIEW" can be displayed with their station call-letters. If you prefer to do so, enter the station call-letters when you program "CATEGORY PREVIEW" channels under "CATEGORY PREVIEW". See "SET CATEGORY PREVIEW" of "Digital functions" on page 16.

### CABLE TV CHANNEL CONVERSION CHART

In addition to normal TV reception from an antenna for VHF (Channels 2 — 13) and UHF (Channels 14 — 69), your TV set is equipped to receive non-scrambled cable TV channels. Sub-Mid band (A-8, A-4 — A-1), Mid band (A-1), Super band (J-W), Hyper band (W+1 — W+28) and Ultra band

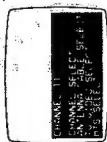
A-8	A-4	A-3	A-2	A-1	A	B	C	D	E	F	G	H	I	J	K	L	M	N
01	96	97	98	99	14	15	16	17	18	19	20	21	22	23	24	25	26	27
02	95	94	93	92	13	12	11	10	09	08	07	06	05	04	03	02	01	00
03	92	91	90	89	32	33	34	35	36	37	38	39	40	41	42	43	44	45
04	89	88	87	86	31	30	29	28	27	26	25	24	23	22	21	20	19	18
05	86	85	84	83	30	29	28	27	26	25	24	23	22	21	20	19	18	17
06	83	82	81	80	29	28	27	26	25	24	23	22	21	20	19	18	17	16
07	80	79	78	77	28	27	26	25	24	23	22	21	20	19	18	17	16	15
08	77	76	75	74	27	26	25	24	23	22	21	20	19	18	17	16	15	14
09	74	73	72	71	26	25	24	23	22	21	20	19	18	17	16	15	14	13
10	71	70	69	68	25	24	23	22	21	20	19	18	17	16	15	14	13	12
11	68	67	66	65	24	23	22	21	20	19	18	17	16	15	14	13	12	11
12	65	64	63	62	23	22	21	20	19	18	17	16	15	14	13	12	11	10
13	62	61	60	59	22	21	20	19	18	17	16	15	14	13	12	11	10	09
14	59	58	57	56	21	20	19	18	17	16	15	14	13	12	11	10	09	08
15	56	55	54	53	20	19	18	17	16	15	14	13	12	11	10	09	08	07
16	53	52	51	50	19	18	17	16	15	14	13	12	11	10	09	08	07	06
17	50	49	48	47	18	17	16	15	14	13	12	11	10	09	08	07	06	05
18	47	46	45	44	17	16	15	14	13	12	11	10	09	08	07	06	05	04
19	44	43	42	41	16	15	14	13	12	11	10	09	08	07	06	05	04	03
20	41	40	39	38	15	14	13	12	11	10	09	08	07	06	05	04	03	02
21	38	37	36	35	14	13	12	11	10	09	08	07	06	05	04	03	02	01
22	35	34	33	32	13	12	11	10	09	08	07	06	05	04	03	02	01	00
23	32	31	30	29	12	11	10	09	08	07	06	05	04	03	02	01	00	99
24	29	28	27	26	11	10	09	08	07	06	05	04	03	02	01	00	99	98
25	26	25	24	23	10	09	08	07	06	05	04	03	02	01	00	99	98	97
26	23	22	21	20	09	08	07	06	05	04	03	02	01	00	99	98	97	96
27	20	19	18	17	08	07	06	05	04	03	02	01	00	99	98	97	96	95
28	17	16	15	14	07	06	05	04	03	02	01	00	99	98	97	96	95	94
29	14	13	12	11	06	05	04	03	02	01	00	99	98	97	96	95	94	93
30	11	10	09	08	05	04	03	02	01	00	99	98	97	96	95	94	93	92
31	08	07	06	05	04	03	02	01	00	99	98	97	96	95	94	93	92	91
32	05	04	03	02	01	00	99	98	97	96	95	94	93	92	91	90	89	88
33	02	01	00	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85
34	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82
35	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79
36	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76
37	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73
38	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70
39	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67
40	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
41	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61
42	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58
43	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55
44	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
45	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
46	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
47	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
48	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
49	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37
50	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34
51	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31
52	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28
53	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
54	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22
55	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19
56	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
57	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13
58	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10
59	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07
60	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07	06	05	04
61	18	17	16	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01
62	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	99	98
63	12	11	10	09	08	07	06	05	04	03	02	01	00	99	98	97	96	95
64	09	08	07	06	05	04	03	02	01	00	99	98	97	96	95	94	93	92
65	06	05	04	03	02	01	00	99	98	97	96	95	94	93	92	91	90	89
66	03	02	01	00	99	98	97	96	95	94	93	92	91	90	89	88	87	86
67	00	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83
68	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82
69	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79
70	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76
71	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73
72	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70
73	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67
74	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
75	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61
76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58
77	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55
78	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
79	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
80	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
81	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
82	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
83	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37
84	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34
85	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31
86	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28
87	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
88	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22
89	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19
90	33	32	31	30	29	28	27	26	25	24								



# FUNCTION BUTTONS

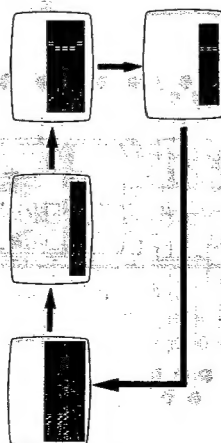
The FUNCTION button on the front panel selects the control modes for TV operation and picture/sound adjustment.

Press FUNCTION button ③ on the front panel. The first time it is pressed, the following display appears on the screen.



- At this time, the top line shows the current channel number. Press FUNCTION button ③ to select the desired item for adjustment. Each time the FUNCTION button is pressed, the magenta-colored portion shifts in the order below to show that the colored item in the list can be adjusted.

Note: Four pages of on-screen displays are available with the FUNCTION button.



1 CHANNEL SELECT mode

2 ANTENNA/CABLE SELECT mode

3 TV/VIDEO SELECT mode

4 MTS SELECT mode

5 VNR ON/OFF mode

6 NOTCH ON/OFF mode

7 TINT adjustment mode

8 COLOR adjustment mode

9 PICTURE adjustment mode

10 BRIGHT adjustment mode

11 DETAIL adjustment mode

12 BASS adjustment mode

13 TREBLE adjustment mode

14 BALANCE adjustment mode

Note: The Remote Control's FUNCTION BACK button ⑤ or FORWARD button ⑥ selects only picture and sound adjustment modes: TINT, COLOR, PICTURE, BRIGHT, DETAIL, BASS, TREBLE and BALANCE. The other control modes can be selected directly with the Remote Control's respective buttons. Pressing the FUNCTION FORWARD button ⑥ advances the colored portion in the order as shown on the left for "picture/sound adjustment modes", pressing FUNCTION BACK button ⑤ advances in the reverse order.

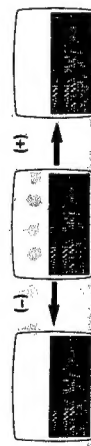
- After selecting the desired mode, press LEVEL/CHANNEL (-/+) buttons ⑦ on the front panel or FUNCTION (-/+) buttons ⑧ on the Remote Control while the selected mode indication is being displayed to make your preferred adjustment. The Remote Control's FUNCTION (-/+) buttons ⑧ control only picture and sound adjustments.

- Notes:
- When using the front panel buttons, before the FUNCTION button is pressed for the first time with nothing displayed on the screen, the TV is in the "CHANNEL SELECT" mode. Therefore, in this mode, channel selection is possible by pressing LEVEL/CHANNEL (-/+) buttons ⑦ on the front panel.
  - After completing picture and sound adjustments from the Remote Control, selecting either FUNCTION (-) or (+) button ⑧ will return directly to the last chosen adjustment mode.

## 1 CHANNEL SELECT mode

In this mode, press LEVEL/CHANNEL (+) button ⑦ on the front panel to scan up the channels, and (-) button to scan down the channels.

(The screen illustrations below show the case when the TV is in the "CHANNEL" mode. When in the "CABLE A" mode, the "CABLE A" indication appears. When in the "CABLE B" mode, the "CABLE B" indication appears instead of "CHANNEL".)



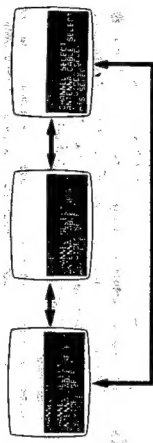
2 ANTENNA/CABLE select (broadcast) mode

In this mode, press LEVEL/CHANNEL (-/+) buttons ⑦ on the front panel to change the broadcast mode among "CHANNEL" (for regular UHF/VHF channels), "CABLE A" (for non-scrambled cable channels) and "CABLE B" (scrambled cable channels).



## 3 TV/VIDEO SELECT mode

In this mode, press LEVEL/CHANNEL (-/+) buttons ⑦ on the front panel to switch the mode among "TV" (for off-air or cable TV broadcasts), "VIDEO-1" (for a video source connected to the TV's INPUT 1 connectors ⑩ or S-VIDEO IN connector ⑪), and "VIDEO-2" (for a video source connected to the TV's INPUT 2 connectors ⑫).



## 4 MTS SELECT mode

This TV set incorporates an MTS (Multichannel Television Sound) decoder to receive stereo broadcasts and any accompanying SAP (Second Audio Program), such as a bilingual broadcast.

- Available sound will be:
- (1) Monaural (MAIN) audio program (regular broadcasts)
  - (2) STEREO (MAIN) audio program
  - (3) Second Audio Program (SAP)

In this mode, the "ON AIR" shows which MTS mode is now being broadcast. Press LEVEL/CHANNEL (-/+) buttons ⑦ to change the reception mode among "STEREO", "SAP" and "MONO". Each time it is pressed, the color of the indication changes from blue to magenta to show that the mode has just been switched.



## Notes:

- Mode selection can be performed with MAIN/SAP button ⑬. Each time it is pressed, the mode changes in the order of "STEREO" — "SAP" — "MONO" — "STEREO".
- If the TV set is kept always set to the stereo mode, when a stereo broadcast is received, stereo sound is output automatically.
- If the received stereo signal is weak, noise may be heard. In such a case, press LEVEL/CHANNEL (-/+) buttons ⑦ (or MAIN/SAP button ⑬) to engage the MONO mode for better sound reception.

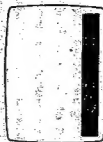
- If the received SAP signal is weak, the SAP will not be heard. Select the MONO mode for better sound reception.
- Even if both stereo and SAP broadcasts are received, both broadcasts cannot be heard at a time.

## When using the TV set for cable reception

Transmission of Cable TV signals may differ from off-air TV broadcasts. It is possible that the multichannel TV sound (MTS) may not be received satisfactorily.

## 5 VNR, NOTCH ON/OFF modes

In these modes, press LEVEL/CHANNEL (-/+) buttons ⑦ on the front panel to switch on and off the VNR and NOTCH functions. For details on these functions, see "MORE USEFUL FUNCTIONS" on page 20.



## 7 Picture/sound adjustment modes

In these modes, an adjustment scale with a marker appears on the screen. Press LEVEL/CHANNEL (-/+) buttons ⑦ on the front panel or FUNCTION (-/+) buttons ⑧ on the Remote Control to fine adjust each item to your preference according to the chart below. (The center position is only a reference level, rather than a standard setting.)

(-) (-)	Item	(+) (+)
Reddish	TINT	Greenish
Subdued	COLOR	Vivid
Light	PICTURE	Strong
Dark	BRIGHT	Bright
Soft	DETAIL	Sharp
Soft	BASS	Strong
Soft	TREBLE	Strong
Left	BALANCE	Right

Note: When you wish to restore all adjustment modes to their scale's center position, use AV STATUS/RESET button ⑭. For details, see "AV STATUS/RESET button" on page 15.

## TINT



## MENU BUTTON

The "MENU" button selects a list of functions that can be programmed for operating the TV more conveniently. This function is possible only on the Remote Control.

- Press MENU button on the Remote Control to display the list of programmable convenience functions on the screen.
- The "MENU" consists of 3 pages. Press the MENU button repeatedly to display the pages in the sequence below.
- Press numbers "1" through "9" on 10-digit keypad to select the corresponding function in the numbered "MENU".



### PAGE-1

**1. CHANNEL SCAN**  
This feature allows automatic scanning. In ascending order, of the channels which have been stored following the procedures of "9. INITIAL SET-UP" (described on page 13).

- With "PAGE-1" MENU displayed on the screen, press "1" of 10-digit keypad .
- All memorized channels (either "CHANNEL": "CABLE A" or "CABLE B" mode) will now be scanned sequentially in ascending order beginning with the channel that the TV is tuned to. Scanning will stop automatically when the original channel is reached. "SCAN STOP" appears to show the CHANNEL SCAN mode has finished.



### 2. YOUR FAVORITES

This feature displays still pictures of current Real Channel broadcasts. They are displayed from among the three most-frequently-viewed channels in each of "DAYTIME" and "EVENING" categories. (The still pictures are periodically updated; however, no sound accompanies them.) Also, any channel whose still picture is displayed on the screen can be directly tuned to by pressing "1", "2" or "3" on the 10-digit keypad.

- With "PAGE-1" MENU on the screen, press "2" on 10-digit keypad . The display will show:



(Sample of channel ranking)

### 3. AUTO VOLUME

Normally, you adjust volume at different times of the day. For example, you tend to turn down the volume when watching TV late at night. This feature memorizes all volume adjustments you make for five days after the clock is set. After that, volume is automatically adjusted according to the pattern of adjustments you made at specific times during that five-day period.

- With "PAGE-1" MENU displayed on the screen, press "3" of 10-digit keypad . The display will show:



- Press "1" to set the AUTO VOLUME function to ON. (Press "2" for OFF.)

- While AUTO VOLUME is ON, the following "AUTO" indication appears on the upper part of the volume level reference scale.



#### Notes:

- When the clock has not been set or is not operating, the AUTO VOLUME function cannot be operated. Also, for five days after the clock has been set, AUTO VOLUME does not operate, since that amount of time is required for storing the data of volume levels for each period of time in memory. (When power is off, the muting function is operated, the clock is not operating, or audio volume controls are adjusted, the volume level data is not stored in memory.)
- For 30 minutes after an audio volume setting, AUTO VOLUME does not operate.
- Adjustments of volume levels are limited to within  $\pm 5$  to prevent an abrupt, extreme change in volume level.
- Automatic volume adjustment is performed every hour.

### PAGE-2

#### 4. HOME SITTER

The "HOME SITTER" feature enables the TV to be turned on and off automatically at preset times every day. With "PAGE-2" (or "PAGE-1" or "PAGE-3") MENU displayed on the screen, press "4" of 10-digit keypad . The display will show:



- At this time, if the display of "POWER INTERRUPTED" message "YOU SET CLOCK FIRST?" appears, it shows that the clock is not operating, and the HOME SITTER will not function.

Press "1" (YES) to set the clock. (If "2" (NO) is pressed, the message "YOU CANNOT OPERATE HOME SITTER" is displayed.)

Set the clock. See "3. SET CLOCK" of "9. INITIAL SET-UP" on page 14 for details regarding clock setting. After setting the clock, the message "THANK YOU!" appears to show that the clock has just been adjusted and the HOME SITTER is now ready to be set.

### 1) SET

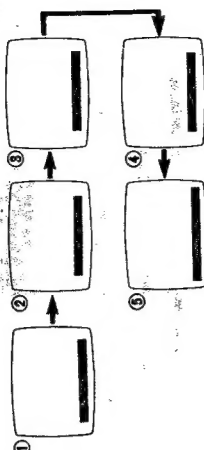
Press "1" to place the HOME SITTER in standby. The ON/OFF time and channel number which have been previously set will be displayed. When the POWER button is pressed to turn the TV off, POWER/ON TIMER indicator lights and "YES" appears on the screen to show that the HOME SITTER is in operation.

### 2) CANCEL

Press "2" to cancel the HOME SITTER. "NO" appears to show that the HOME SITTER has been canceled.

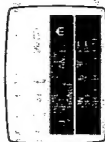
### 3) CHANGE

Press "3" to re-adjust the HOME SITTER setting. Follow the on-screen displays to set the switch-on time, switch-off time and channel number, using the 10-digit keypad.



- Set the switch-on time. 1 Select "AM" or "PM".
- Select "AM" or "PM". 2 Set the channel number.
- Set the switch-off time. 3

When the channel number is set, the display will show:



- This display shows that the HOME SITTER is set to switch the TV on at 6:30 PM, switch it off at 11:00 PM and the channel to be received is "CABLE B 13".

#### Notes:

- If an invalid time or channel number is selected, it will be rejected and it must be reset properly.
- First select the broadcast mode (CHANNEL, CABLE A or CABLE B) of the channel you wish to set for the HOME SITTER with ANT/CABLE button on the Remote Control before entering the HOME SITTER mode, since broadcast mode switching while in the HOME SITTER will cancel the mode.
- If you wish to reset the switch-on time only, stop keying in data (waiting until the on-screen display disappears) after keying in the AM/PM setting, or press keys other than the 10-digit keypad. And, if you wish to reset the switch-on and switch-off time only, the procedure is the same.
- The function that automatically turns the TV off for the ON TIMER, if no TV operation is performed after 2 hours, does not operate for the HOME SITTER.
- If the power is disconnected (such as in a power failure, etc.), and reconnected later, the HOME SITTER will be canceled. When disconnected only for a couple of minutes, the HOME SITTER is reactivated; however, it turns the TV on and off later than the set time by the amount of time of interruption.
- If the channel which has already been set as a "Guarded Channel" is selected, that channel is rejected and cannot be set for the HOME SITTER. (For details of the Guarded Channels, see page 12.)



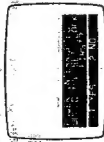
## 5. 12HR SLEEP TIMER

The "12HR SLEEP TIMER" feature allows you to turn off your TV automatically at a preset time.

1) With "PAGE-2" (or "PAGE-1" or "PAGE-3") MENU displayed on the screen, press "5" of 10-digit keypad. The display will show:



- If the built-in clock has not been set to operate properly, the 12HR SLEEP TIMER will not function. In this case, the following display will appear on the screen to show that the clock requires adjustment.



Press "1" (YES) of the 10-digit keypad to adjust the clock. (If "2" (NO) is pressed, the warning message "YOU CANNOT OPERATE SLEEP TIMER" is displayed.)

Set the built-in clock. (See "3) SET CLOCK" of "9. INITIAL SET-UP" on page 14 for details.) When the clock is adjusted, the message "THANK YOU!!" appears. Then, the following display appears to show that the SLEEP TIMER is now ready to be set.

2) Press the numbers on the 10-digit keypad to set the desired switch-off time. The 12HR SLEEP TIMER can be set for up to 11 hours 59 minutes from the current time. For example, if it is now 7:00 PM, and you want the TV to switch off automatically at 9:00 PM, press "9", "0", "0" and "0" (or press "9", "0" and "0"). (The "AM/PM" setting is done automatically.) The selected time of "9:00 PM" appears.

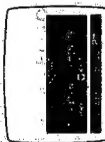


- When you select "1" for hour setting (for example, "1:05 AM"), remember to press "0" first, then press "1", "0" and "5".
- To cancel the 12HR SLEEP TIMER setting, key in the current time (the current time setting of the TV's built-in clock).

### Notes:

- If an invalid time is selected (for example: "5:87"), it will be rejected and the 12HR SLEEP TIMER must be reset properly.
- While the 12HR SLEEP TIMER is activated, if the POWER button is pressed to turn the power off and on again, the 12HR SLEEP TIMER will be canceled.
- While the 12HR SLEEP TIMER is activated, if the power is disconnected (such as in the case of power failure, etc.) and reapplied later, the TV is turned off. When disconnected only for a couple of minutes, the 12HR SLEEP TIMER is re-activated; however, it turns the TV off later than the set time by the amount of time of interruption.
- The 12HR SLEEP TIMER may turn off the TV a little earlier than the preset time.
- When the remaining time reaches 1 minute, the following message appears for a few seconds and "GOOD NIGHT"

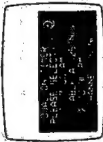
continues to blink. While the display remains on the screen, each pressing of the FUNCTION FORWARD button (▼) on the Remote Control will delay the turn-off time by 15 minutes.



## 6. DUAL ON TIMER

The "DUAL ON TIMER" feature allows you to turn on your TV automatically at a preset time and on a specific channel. The DUAL ON TIMER is available for 2 different settings.

With "PAGE-2" (or "PAGE-1" or "PAGE-3") MENU displayed on the screen, press "6" of 10-digit keypad. The display will show:



- At this time, if the display of "POWER INTERRUPTED/YOU SET CLOCK FIRST?" (which may appear during the 12HR SLEEP TIMER procedure) appears, it shows that the clock is not operating, and the DUAL ON TIMER will not function.

Press "1" (YES) to set the clock. (If "2" (NO) is pressed, the warning message "YOU CANNOT OPERATE ON TIMER!" is displayed.)

Set the clock. See "3) SET CLOCK" of "9. INITIAL SET-UP" on page 14 for details regarding clock setting. After the clock has been set, the message "THANK YOU!!" appears to show that the clock has just been adjusted and the DUAL ON TIME is now ready to be set.

Two different settings are possible. Press "1" or "2" to select the setting position. The display will show:



- The second from the bottom line shows the preset time if already previously set.

### 1) SET

Press "1" to start the DUAL ON TIMER for turning the TV on automatically at the preset time shown. "YES" appears to show that the DUAL ON TIMER has started.

### 2) CANCEL

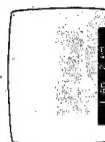
Press "2" to cancel the setting. "NO" appears to show that the DUAL ON TIMER has been canceled.

### 3) CHANGE

Press "3" to re-adjust the setting. Then, the following display appears.



Press the numbers on the 10-digit keypad to set the desired switch-on time. For example, if you want the TV to switch on automatically for CHANNEL 12 at 7:00 AM, press "7", "0" and "0". (When you select "1" for hour setting, remember to press "0" first, then press "1".) The selected time of "7:00" appears and immediately the display changes to:



Then, press "1" to select the "AM" setting. (Press "2" to select the "PM" setting.) Then, the following display appears. Press "1" and "2" for specifying "CHANNEL 12".



Now the following display appears on the screen to show the DUAL ON TIMER is set to "7:00 AM, CHANNEL 12" with the <YES> indicating the DUAL ON TIMER has started. Finally, press POWER button to turn the power off. POWER/ON TIMER indicator remains lit to show that the DUAL ON TIMER is in operation.



### Notes:

- If an invalid time is selected (for example: "17:00"), it will be rejected and the DUAL ON TIMER must be reset properly.
- First select the broadcast mode (CHANNEL, CABLE A or CABLE B) of the channel you wish to set for the DUAL ON TIMER with ANT/CABLE button on the Remote Control before entering the DUAL ON TIMER mode, since broadcast mode switching while in the DUAL ON TIMER will cancel the mode.
- After the DUAL ON TIMER has been properly set, it functions only once for each setting (up to 2 settings are possible) to turn on the TV's power. (It does not operate repeatedly every day at the same time as a serial time.)
- Once the DUAL ON TIMER turns the TV on automatically, if the TV is not operated in any way, after 2 hours the TV will turn off automatically for safety. A single adjustment, even audio level adjustment or channel selection, will cancel this switch-off function.
- While the DUAL ON TIMER is activated, if the power is disconnected (such as in the case of power failure, etc.) and reapplied later, the DUAL ON TIMER is canceled. When disconnected only for a couple of minutes, the DUAL ON TIMER is reactivated; however, it turns the TV on later than the set time by the amount of time of interruption.
- If the channel which has already been set as a "Guarded Channel" is selected, that channel is rejected and cannot be set for the DUAL ON TIMER. (For details of the Guarded Channels, refer to page 12.)
- When "2" is pressed, any presets previously made after "1" was pressed will be canceled. To keep DUAL ON TIMER functioning, make sure to reset it by pressing "1" after pressing "2".

## PAGE-3

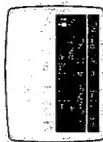
### 7. CHILD TIMER

The "CHILD TIMER" feature enables the TV to be turned off automatically at a preset time every day. Once it has been set, it continues to operate unless it is canceled. If the power is turned on within an hour after this timer has been set, a blue-blank screen appears instead of a broadcast picture. At this time, a correct ID number must be entered; then, the blue-blank screen is replaced by a broadcast picture.

With "PAGE-3" (or "PAGE-1" or "PAGE-2") MENU displayed on the screen, press "7" of 10-digit keypad. The display will show:



Then, press "0". The display changes to:



#### 1) SET

Press "1" to place the CHILD TIMER in standby. The OFF TIME which has been previously set will be displayed. "YES" appears on the screen to show that the CHILD TIMER is in operation.

#### 2) CANCEL

Press "2" to cancel the CHILD TIMER. "NO" appears to show that the CHILD TIMER has been canceled.

#### 3) CHANGE

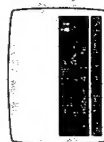
Press "3" to re-adjust the CHILD TIMER setting. Follow the on-screen displays to reset the OFF TIME, using the 10-digit keypad.



Set the OFF TIME.

Select "AM" or "PM".

When the OFF TIME is set, the display will show:



#### 4) SET ID NO.

Press "4" to set the ID number. The display will show:

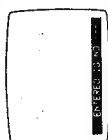


Press any of 3 numbers you wish to be the ID number. When completed, "ENTERED" appears to show that the ID number you have just keyed in is set.



# CHILD TIMER operation

1) When the POWER button is pressed after the CHILD TIMER has already turned the power off, the following display appears.



2) Key in the ID number using the 10-digit keypad. Then the blue-blank screen will change to a normal screen.



3) If the keyed-in ID number is incorrect, the display shows:

And the blue-blank screen will remain.

## Notes:

- If you wish to change the ID number, follow the steps of "4) SET ID NO."
- If the power is disconnected (such as in the case of power failure, etc.), and reapplied later, the ID number is reset to "0000".
- If you forget the ID number which you have set, reset it.
- Since the ID number for the CHILD TIMER and CHANNEL GUARD is the same, changing one will also automatically change the other.

## 8. CHANNEL GUARD

The "CHANNEL GUARD" feature allows you to assign an "ID number" to specific channels of your choice, making them "Guarded Channels". This prevents these specific channels from being selected, unless the "ID number" is keyed in.

First select a channel you wish to set as a Guarded Channel. With "PAGE-3" (or "PAGE-1" or "PAGE-2") MENU displayed on the screen, press "9" of 10-digit keypad. The display will show:

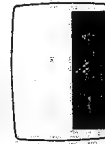


Then, press "0". The display changes to:

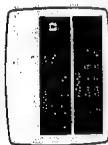


- Channel numbers displayed are Guarded Channels, if already previously set.

1) SET  
Press "1". The display changes to:



For example, if the current channel being received is "CHANNEL 25", and you wish to store this channel as Guarded Channel 1, then press "1". The display changes to show that CHANNEL 25 is now set as Guarded Channel 1.



2) CANCEL  
Press "2" to cancel the Guarded Channel. The display will show:



With this display on the screen, press the number of the Guarded Channel you wish to cancel from the list. For example, if you wish to cancel CHANNEL 25 (in this case, Guarded Channel 1) from the list, press "1". Then the display changes to show that CHANNEL 25 (Guarded Channel 1) has been canceled.



3) SET ID NO.  
Press "3" to set the ID number. The display will show:



Press any 3 digits you wish to be the ID number. When completed, "ENTERED" appears to show that the ID number you have just keyed in is set.



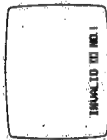
## Viewing Guarded Channels

1) Select the Guarded Channel. (If the Guarded Channel you wish to view is CHANNEL 25, press "2" and "5"). Then, the following display appears:



2) Key in the ID number using the 10-digit keypad. The channel appears.

3) If the keyed-in ID number is incorrect, the display shows:



And the Guarded Channel you have selected cannot be seen.

Notes:

- If you wish to change the ID number, follow the steps of "3) SET ID NO."
- If the power is disconnected (such as in the case of power failure, etc.), and reapplied later, the ID number is reset to "0000".
- When performing the CHANNEL SCAN function, or selecting channels using CHANNEL (-/+) button, the Guarded Channels are skipped.
- In the following cases, the Guarded Channel can be seen without keying in the ID number:
  - When you press RETURN button from a channel which has been selected immediately after viewing a Guarded Channel.
  - When you press ANT/CABLE button from a channel of a different broadcast mode (CHANNEL, CABLE A or CABLE B) which has been selected immediately after viewing a Guarded Channel.
  - When you press CHANNEL (-/+) button on the Remote Control or LEVEL/CHANNEL buttons on the front panel, while in the MANUAL PAGE-3, if the selected channel which has already been added happens to also be a Guarded Channel.
  - When you press "4" (CHANNEL UP) or "5" (CHANNEL DOWN) of the 10-digit keypad while in the MANUAL PROGRAM mode of the INITIAL SET-UP; if the Guarded Channel happens to also be the next higher or lower channel following the one to which you are presently tuned.
  - While in the AUTO PROGRAM mode of the INITIAL SET-UP; if the AUTO PROGRAM is interrupted immediately when a Guarded Channel appears.
  - When the channel which has already been set for the DUAL ON TIMER or HOME SITTER is set as a Guarded Channel.
  - If you forget the ID number which you have set, reset it.
  - When any channel from 02 to 13 is guarded in any one of the three broadcast modes (CHANNEL, CABLE A or CABLE B), the same corresponding channel number will be automatically guarded in the other two broadcast modes as well.

## 9. INITIAL SET-UP

The INITIAL SET-UP feature allows you to perform basic settings for the TV status. This consists of Channel Memory (Auto/Manual), Set Clock, Set AV Status, Noise Mute, Message Style and Set Mute Level.

Note: When performing Channel Memory (MANUAL PROGRAM), select an appropriate broadcast mode (either "CHANNEL", "CABLE A" or "CABLE B") before you select the INITIAL SET-UP mode.

- With "PAGE-3" (or "PAGE-1" or "PAGE-2") MENU displayed on the screen, press "9" of 10-digit keypad. The "INITIAL SET-UP" consists of 3 pages. Press "9" of 10-digit keypad, or the MENU button repeatedly to display the pages in the sequence below.
- Press numbers "1" through "7" on 10-digit keypad to select the corresponding function of the numbered items.



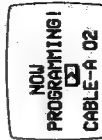
### 1) AUTO PROGRAM

This function allows memorizing the channels automatically to match the TV broadcasts and cable channels of your area. The memorized channels can be selected by CHANNEL (-/+) button on the Remote Control or LEVEL/CHANNEL (-/+) buttons on the front panel, or in the CHANNEL SCAN mode, while skipping channels where there are no broadcasts.

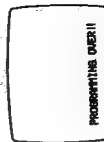
Press "1" of the 10-digit keypad. The following display will appear and the program set-up procedure begins automatically.



When tuned to a channel in which a TV program is broadcast, the following display appears and this channel is memorized.



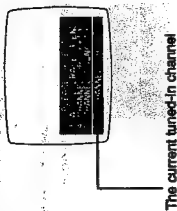
When the AUTO PROGRAM procedure (scanning and memorizing) is completed, it will be indicated by the following display.



## Notes:

- If the broadcast signals are weak, the channel may not be memorized. In this case, perform the MANUAL PROGRAM procedure.
- The AUTO PROGRAM procedure takes approximately 4 minutes. If you wish to stop this procedure before completion, press any button on the Remote Control.

**2) MANUAL PROGRAM**  
Similar to the AUTO PROGRAM function on the previous page, this is for memorizing channels, but it is performed manually. The resulting Manual Programming is also effective when performing up/down channel selection or CHANNEL SCAN. Press "2". The display will show:



Simply follow the on-screen instructions.

**Note:** First select the broadcast mode before entering this MANUAL MEMORY mode.

- 1) Press "1" (ADD) to add this channel in memory. A bar "-" will appear between the broadcast mode (CHANNEL or CABLE) and the channel number to show that the channel has been memorized.
- 2) Press "2" (ERASE) to erase this channel from memory. If you do not wish to preset it in memory or if no TV station is broadcasting on it. The bar between the broadcast mode and channel number will disappear.
- 3) Press "4" (CHANNEL UP) or "5" (CHANNEL DOWN) to select the next higher or lower channel.
- 4) Press "3" (END) when you have stored all required channels in memory.
- 5) When you wish to store channels of the other broadcast mode, select the mode first, then repeat steps 1) through 4).
  - In step 3) above, if selecting channels is difficult, press the CHANNEL (-/+) buttons on the Remote Control.
  - Be sure to perform these operations using the Remote Control.

**3) SET CLOCK**

Your TV has a built-in clock. Set the clock as follows.

- 1) Press "3" of 10-digit keypad. The display will show:



- 2) Then, press the numbers on the 10-digit keypad to set the current time. For example, if the present time is 7:35 PM, press "0", "7", "3" and "5" (or press "7", "3" and "5"). Then, the display changes to:



- 3) Make sound adjustments to your preference. Use the FUNCTION BACK/FORWARD buttons to select the item, and use the FUNCTION (-/+) buttons to adjust each item. When finished, press "2". The following display will appear.



- 3) Press "2" to select the "PM" setting. (Press "1" to select the "AM" setting.) Then, the display changes to the following to show the current time is set and the clock starts operating.



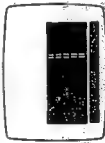
**Notes:**

- If an invalid time is selected (for example: "17:70"), it will be rejected and the built-in clock must be reset properly.
- If you wish to set the clock precisely, in step 3) above, press "2" (or "1") at the same instant of a time signal.
- The built-in clock may lose time depending on the manner in which the TV is used or the frequency of the power source. If the time difference becomes great, re-adjust the clock.
- If the power is disconnected (such as in the case of a power failure, etc.), and reapplied later, the clock will stop operating. (The clock status can be checked on the screen. Press the DISPLAY button. If the clock has stopped, the message "CLOCK STOPPED" is displayed instead of the current time. See "DISPLAY Button" on page 20 for details.) When disconnected only for a couple of minutes, the clock is reactivated; however, it will be later than the actual time by the amount of time of interruption.

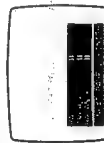
**4) SET AV STATUS**

Your TV set incorporates the AV STATUS memory that can store 2 variations for preset picture/sound adjustments, allowing you to change the picture/sound tone/speaker balance to your preference, depending on each source.

- 1) Press "4" of 10-digit keypad. The display will show:



- 2) Make picture adjustments to your preference. Use the FUNCTION BACK/FORWARD buttons to select the item, and use the FUNCTION (-/+) buttons to adjust each item. If you also wish to make sound adjustments, press "1" to advance the adjustment mode display. The following display will appear. (Press "1" again to return to the picture adjustment display.)



- 4) Press "1" to store the setting as the "AV STATUS A". (Press "2" to store it as the "AV STATUS B".) Then the picture and sound adjustment settings (items and their reference scales) appear for a few seconds each.



**AV STATUS/RESET button**

Use this button for choosing the preset AV STATUS or for resetting the picture/sound adjustment items. Press AV STATUS/RESET button on the Remote Control. The following display appears.



- Another pressing of the AV STATUS/RESET button resets all previously adjusted items to their center positions.

1. AV STATUS A  
Press "1" of 10-digit keypad for selecting AV STATUS A. The picture and sound change as preset for "AV STATUS A". Then the picture and sound adjustment settings (items and their reference scales) appear for a few seconds each.

**Note:** While in this mode, the setting of the AV STATUS cannot be canceled.



**2. AV STATUS B**

Press "2" for selecting AV STATUS B. The picture and sound change as preset for "AV STATUS B". Then the picture and sound adjustment settings (items and their reference scales) appear for a few seconds each.

**3. RESET**

Press "3" when you wish to reset all adjusted items (TINT, COLOR, PICTURE, BRIGHT, DETAIL, BASS, TREBLE and BALANCE) back to their center positions at the same time. The on-screen displays appear and change as follows:

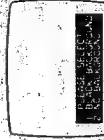
- When the Noise Mute mode is engaged, it is also applied to the output signals, both from LINE OUT connectors and from AUDIO OUT (VARIABLE) connectors. Release the Noise Mute mode to prevent it from having effect when connecting external components to the TV.

**6) MESSAGE STYLE**

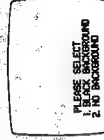
This function is for switching the black background of the on-screen display on and off (except for channel numbers and clock time). Press "6". The display will show:



Press "1" to select the on-screen display mode with a black background.



Press "2" to select the on-screen display mode without a black background.



Press the **VOLUME (+/-)** button(s) to preset a mute level. Then press **"1"** to complete the setting.

**Note:**  
• If the preset mute level is greater than the current volume level, pressing the **MUTE** button makes the volume level "00".



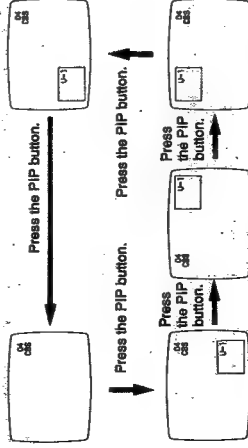
## DIGITAL FUNCTIONS

This TV features various digital functions, as follows. Basic digital functions can be operated simply by pressing exclusive Remote Control buttons. Other digital functions can be accessed by calling up the "DIGITAL COMMAND MENU".

### 1. Basic PIP (Picture-in-Picture)

Basic PIP superimposes a sub picture (1/9 full-size) on the main picture. Therefore, combinations of regular or cable TV broadcasts, VIDEO 1 or VIDEO 2 sources can be simultaneously displayed. It is also possible to switch the main picture with the sub picture, or position the sub picture in any corner of the screen.

- 1) Press **PIP** button . As shown below, a PIP picture will appear.
- Pressing this **PIP** button switches corner position of the sub picture, as shown below, or switches the Basic PIP mode on or off.
- When pressing **PIP** button to switch the Basic PIP mode off, then on, the sub picture will appear in the position where it last appeared.



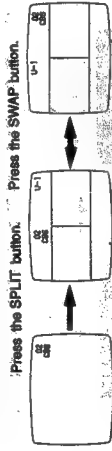
- 2) In the Basic PIP mode, the main picture can be switched using **TV** button , **VIDEO 1** button , or **VIDEO 2** button .
- Each pressing of **PIP SOURCE** button switches the sub picture among the TV, VIDEO 1 and VIDEO 2 modes.
- 3) In the Basic PIP mode, each pressing of **SWAP** button switches the main and sub pictures, as shown below.



- Notes:**
- In the Basic PIP mode, tuning operations can be performed only for the TV-mode picture, whether it is a main or sub picture.
  - Only main picture sound can be heard.
  - Poor picture signals or no picture signals will appear as such in the Basic PIP pictures.
  - Basic PIP mode character colors are indicated as follows: cyan is for the CHANNEL mode, yellow is for the CABLE A mode, magenta is for the CABLE B mode, and cyan is for the VIDEO mode.
  - When the basic PIP mode is called up or when any channel selection is made while in the basic PIP mode as described below on the left, a channel number or input mode indication appears; press **DISPLAY** button to clear the indication.

### 2. SPLIT

The **SPLIT** feature simultaneously displays two different pictures from among the TV, VIDEO 1 and VIDEO 2 modes on screen.  
Press **SPLIT** button to call up the **SPLIT** display shown below. Each picture is 1/4 normal size; only sound for the picture on the left will be heard. Pressing **SWAP** button switches left and right positions.  
To recall a normal picture, press the **SPLIT** button again, or press **PIP OFF** button .



In this mode, the source of the picture on the left can be switched using **TV** button , **VIDEO 1** button or **VIDEO 2** button ; each pressing of **PIP SOURCE** button switches the picture on the right among TV, VIDEO 1 and VIDEO 2 sources.

In the **SPLIT** mode, tuning operations can be performed only for the TV mode picture.

- Notes:**
- In the **SPLIT** mode, if there is no signal or a poor signal for either right or left picture, the pictures will appear accordingly.
  - When the **SPLIT** mode is called up or when any channel selection is made while in the **SPLIT** mode as described above, a channel number or input mode indication appears; press **DISPLAY** button to clear the indication.

### 3. RETRO PLAY

**RETRO PLAY** replays any video or broadcast scene that has appeared on the screen within the previous few seconds. Press **RETRO PLAY** button to call to the screen any scene which has been stored in memory, as shown below. Each pressing of the **RETRO PLAY** button repeats a review cycle; pressing of **PIP OFF** button restores the normal picture.



**Notes:**

- Just after pressing the **PIP OFF** button to exit the Basic PIP, **SPLIT**, **RETRO PLAY**, **FREEZE**, **DIGITAL COMMAND MENU**, etc., data are not completely updated. Pressing the **RETRO PLAY** button calls up the following message; after a few seconds (after data of 9 frames have been stored in memory completely), the **RETRO PLAY** will function.



- In this mode, if there is no source signal or a poor source signal, the **RETRO PLAY** picture will appear accordingly.

### 4. FREEZE

**FREEZE** makes any moving picture which is currently being displayed on the screen a still picture.  
Press **FREEZE** button to freeze the picture on screen. Press the **FREEZE** button again, or press **PIP OFF** button to restore normal moving pictures.

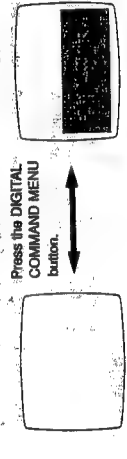
**Notes:**

- While a still picture is being displayed, the sound of the source will be heard.
- This **FREEZE** feature has no effect on the Basic PIP, **SPLIT**, **RETRO PLAY**, **DIGITAL COMMAND MENU**, etc.
- In this mode, if there is no source signal or a poor source signal, the still picture will appear accordingly.
- When the **FREEZE** mode is engaged, the location, size or color tone, etc. of the still picture may differ very slightly from the moving picture.

### 5. DIGITAL COMMAND MENU

In addition to using remote control to access Basic PIP, **SPLIT**, **RETRO PLAY**, and **FREEZE**, the **DIGITAL COMMAND MENU** can also be called up.

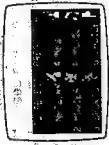
- Press **DIGITAL COMMAND MENU** button to call up the **DIGITAL COMMAND MENU** on screen. (Press it again to exit this menu at any time.)
- Press **"1"**, **"2"**, **"3"**, or **"4"** on 10-digit keypad to select the corresponding function on the **DIGITAL COMMAND MENU**.



### 1. CATEGORY PREVIEW

This function stores up to six frequently-viewed channels in each of six different categories (Network, Movies, Sports, News, Music and Choice). Press the **CATEGORY PREVIEW** button for immediate, direct access to a selected channel.

- 1) While the **DIGITAL COMMAND MENU** is on screen, press **"1"** on 10-digit keypad to call up the following Category Menu.



- 2) Press **"1"**, **"2"**, **"3"**, **"4"**, **"5"** or **"6"** on 10-digit keypad to select a Category. (For example, press **"1"** to select "Network".) Then, as shown below, the broadcasts of the selected channels appear on screen sequentially on a channel menu. Press **"7"** of the 10-digit keypad to restore the Category Menu.



- 3) While the above display is on screen, press **"1"**, **"2"**, **"3"**, **"4"**, **"5"**, or **"6"** to directly tune to the selected channel. (For example, press **"1"** to tune to "CNN".)



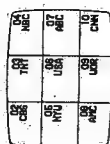
**Notes:**

- Any channel picture displayed on the channel menu is periodically updated; no sound is available.
- Guarded channels cannot be displayed on the channel menu.
- For presetting the **CATEGORY PREVIEW**, refer to "4. SET CATEGORY PREVIEW" on page 18.

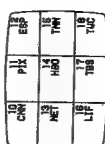
## 2. MULTI CHANNEL INDEX

This allows up to 9 preset Program Channel to be simultaneously displayed. However, guarded channels cannot be displayed.

- 1) With the DIGITAL COMMAND MENU on screen, press "2" on 10-digit keypad. As shown below, the MULTI CHANNEL INDEX display appears. Each scene except for the last is a still picture; the ninth scene is a moving picture with sound.



- 2) Press FUNCTION FORWARD (▼) button to call up the next MULTI CHANNEL INDEX.  
Press PIP OFF button to exit this mode and restore normal moving pictures. The picture for the channel indicated on the top left of the MULTI CHANNEL INDEX display appears.



Note:

- If MULTI CHANNEL INDEX is attempted in the VIDEO mode, even though the mode is switched to the TV mode, the MULTI CHANNEL INDEX function will not operate.

## 3. DIGITAL STROBE

This feature lets you review a fast-moving scene, such as sports action, in a 9-frame multi-picture sequence.

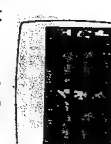
- Press "3" of 10-digit keypad while the DIGITAL COMMAND MENU is displayed. This activates the DIGITAL STROBE function, and a 9-picture sequence appears on screen (with each picture 1/9 full size). Each frame is a still picture except for the ninth, which is a moving picture with sound.



## 4. SET CATEGORY PREVIEW

This is for setting CATEGORY PREVIEW channels.

- 1) With the DIGITAL COMMAND MENU displayed, press "4" of 10-digit keypad to select "SET CATEGORY PREVIEW". As shown below, the Category Menu appears on screen.



- 2) While the display is on screen, press "1", "2", "3", "4", "5", or "6" of the 10-digit keypad to select a Category. (For example, press "1" to select "NETWORK"). Then, as shown below, current scenes for previously stored Category channels simultaneously appear on the Channel Menu

display. Each picture is a still except for the last one, which moves and has sound.



- 3) While the above is on screen, press "1", "2", "3", "4", "5", or "6" of the 10-digit keypad to select a Category position in which to store a channel. (For example, press "3"). Then, the corresponding Category Position number (in this case, "3") turns magenta. As shown below, since a channel number can be entered, press the keypads corresponding to the channel number you want to preset. (For example, press "0" and "8"). The channel's current scene appears at the corresponding Category Position. (Only a corresponding picture becomes a moving picture.)



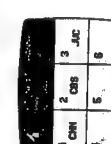
- 4) With this display, you can store the TV station's call letters along with its channel number for handy reference. (Up to 4 letters can be stored.)



- 5) Press either FUNCTION FORWARD (▼) or BACK (▲) button to select each call letter to be stored. Available characters include the alphanumeric characters (26 English-language letters and 10 numerals), plus various punctuation marks (period, comma, etc.). Then, move the cursor to the next letter position by pressing either FUNCTION (→) button on the Remote Control.

Press "1". The display shown in step 2 appears again, ready for you to make another setting within the same Category. Press "2". The display shown in step 1 appears again and a setting can be performed in a different Category. At this time, press PIP OFF button. The display shown in step 1 disappears and "SET CATEGORY PREVIEW" will be disengaged.

(For example, if you choose the letters "JVC", keep the FUNCTION FORWARD (▼) or BACK (▲) button pressed until the letter "J" appears. Then, press the FUNCTION (→) button to move the cursor one letter position to the right. Press the FUNCTION FORWARD or BACK button to select the letter "V", then move the cursor to the right again with the FUNCTION (→). In the same way, select "C". (This display disappears in a few seconds automatically without pressing the PIP OFF button.)



Notes:

- Some major U.S. broadcast channel frequencies have been preset in this TV before shipping. However, these channels may be scrambled. Scrambled channels cannot be received without use of a converter supplied by a CATV company.
- No Guarded Channels can be stored in the SET CATEGORY PREVIEW mode.

## DIGITAL COMMAND AI SELF-DEMONSTRATION FEATURE

Your TV has a self-demonstration feature for the incorporated DIGITAL COMMAND AI system, demonstrating automatically all major functions of the DIGITAL COMMAND AI.

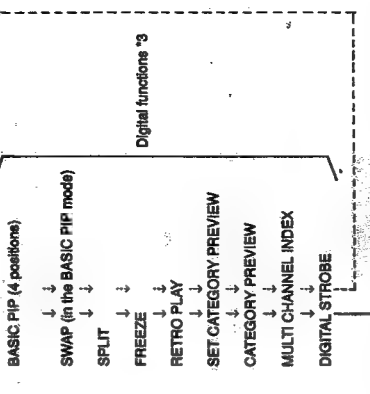
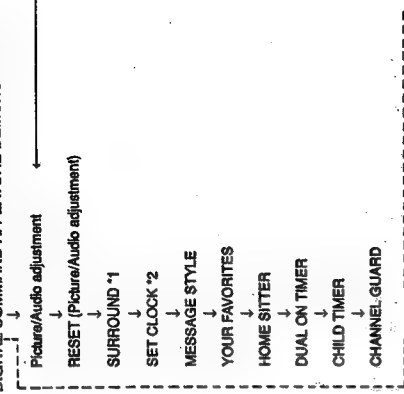
With "PAGE-1" (or "PAGE-2" or "PAGE-3") MENU displayed, press "0" twice on the 10-digit keypad ("0-0"), or press the FUNCTION and VOLUME (—) buttons on the front panel simultaneously. The demonstration automatically begins in the following order. If you wish to stop the demonstration anytime while it is running, press any key on the Remote Control or on the front panel.

Also, while the DIGITAL COMMAND MENU displayed, either pressing "0" twice on the Remote Control's 10-digit keypad, or pressing the CHANNEL and VOLUME (—) buttons simultaneously executes only digital features demonstration, as shown by dotted lines at right.



## Demonstration procedure

### "DIGITAL COMMAND AI FEATURE DEMONSTRATION"



\*1: SURROUND mode and REAR LEVEL/CENTER LEVEL indication are displayed on the screen.

\*2: The SET CLOCK mode can operate only when the built-in clock is stopped.

\*3: In the PIP display, the sub picture for the source currently engaged — TV, VIDEO1 or VIDEO2 — will be displayed.

Notes: • Operating this function adjusts the clock, timer settings, and all other functions to specific demonstration settings. Therefore, re-adjustment of these settings is required once the demonstration has been executed.

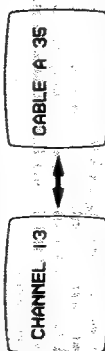
• During the demonstration, a channel which has been preset in the demonstration program is automatically tuned to.



## MORE USEFUL FUNCTIONS

### RETURN Button

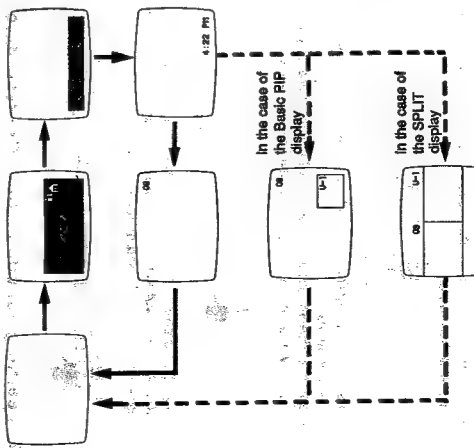
Press RETURN button ● on the Remote Control. The previously viewed channel will appear on the screen. Press RETURN again to switch back to the original channel. Repeatedly pressing RETURN switches between these two channels.



Note: In the VIDEO mode, if the RETURN button is pressed, the mode is switched to the TV mode.

### DISPLAY Button

Press DISPLAY button ● on the Remote Control. The channel number of the program you are now viewing, the current settings of time for SLEEP/TIMER/DUAL ON TIMER/HOME SITTER (with symbol)/CHILD TIMER (with symbol), VNR/NOTCH settings, the current time and the channel number with its call letters are displayed in the order as shown below by each pressing of the DISPLAY button. The current time remains displayed on the screen until the DISPLAY button is pressed again.



### Notes:

- If the SLEEP TIMER and/or ON TIMER is cancelled, their settings will not be displayed.
- When "Basic PIP pictures" or "SPLIT pictures" appear on screen, after the DISPLAY button is pressed, a pair of channel numbers or video modes are indicated as shown above.

### MUTE Button

Press MUTE button ● on the Remote Control. The sound of the TV program being viewed will be reduced to a mute level which has been preset, and the corresponding "VOLUME" indication will appear on the screen. Press again to restore the sound. Also, a mute level setting is possible. See "7) SET MUTE LEVEL" of "9. INITIAL SET-UP" on page 16.

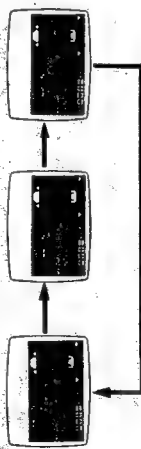
Note: Changing the audio volume or channel number also restores the sound.



On-screen indication when presetting mute level to "VOLUME 0"

### SURROUND Button

Press SURROUND button on the Remote Control to switch the Surround mode or to adjust the balance between EXT. SPKR., SURROUND SPKR. and CENTER SPKR. sound.

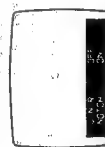


Note: For SURROUND, refer to "1) Listening To Surround Sound" on page 29.

### VNR Button

The "VNR" or "Video Noise Reduction" feature eliminates on-screen picture noise, making pictures appear clearer. Press VNR button ● on the Remote Control. The following display will appear on the screen. Press again to turn the VNR mode off. The display changes to "OFF" and the picture is restored to normal.

- Normally, set this function to "OFF".



### NOTCH Button

The "Notch" feature substantially reduces horizontal noise, or "dot interference" appearing on the screen especially between two prominent colors bordering each other. Press NOTCH button ● on the Remote Control. The following display will appear on the screen. Press again to turn the Notch mode off. The display changes to "OFF" and the picture is restored to normal.



**VCR Controls**  
Your TV's Remote Control is provided with additional buttons ● for controlling all major functions of the specified JVC VCRs listed below. Each button's designation corresponds to that of the JVC's. Refer to the instruction manual of the VCR for detailed operation.

### Operable JVC VCRs

HR-S200U  
HR-S101U  
HR-D370U  
HR-D70U  
HR-D56SU  
HR-D140U  
HR-D142U  
HR-D568U  
HR-D150U  
HR-D70U  
HR-D725U  
HR-D180U  
HR-D756U  
HR-S7000U

• In addition to the above, new JVC VCR models are also operable via this Remote Control.

### CHANNEL (VCR)

Press to change channels of a connected VCR's built-in tuner. (With some models, this function is not available.)

### PAUSE/STILL

Press to engage Pause mode during recording, or to view a still picture during playback.

### STOP

Press to stop tape running. Press simultaneously with PLAY button to start recording.

### REW

Press in Stop mode to rewind the tape. Press in Play mode to view speeded-up picture (Shuttle Search).

### PLAY

Press to play back the tape. And press simultaneously with REC to start recording.

### FF

Press in Stop mode to fast-forward the tape. Press in Play mode to view speeded-up picture (Shuttle Search).

### POWER (VCR)

Press to turn VCR's power on and off. (With some models, this function is not available.)

• When this TV and a JVC VCR are connected with an RF cable, the TV and VCR can be switched to the TV mode by pressing TV button ● on the Remote Control. (With some models, this function is not available.)

Pressing VIDEO button ● or ● does not make the VCR enter the VIDEO mode.

### DEGAUSS Button

When color patches appear on the screen even after correction is attempted by changing the TV's facing direction, by moving the TV set or placing any implement generating a slight magnetic field some distance away from the TV set, press DEGAUSS button ●. This will make the picture tube demagnetized and clear the color patches.

### Notes:

- While the button is being pressed, the picture oscillates for a few seconds. This is normal.
- Pressing more than once at a time has no effect. If you want to perform demagnetization again, press after waiting approximately 20 to 30 minutes.
- Degauss circuit also works when the power is ON via POWER button ●.

## LEARNING BUTTONS

### 1. Basic Learning functions

Each of the LEARNING buttons, as well as the VCR control buttons, can "learn" only one of the functions of another remote control unit.

### Programming

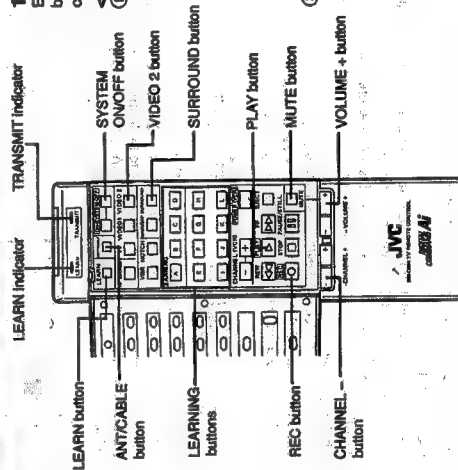
- Put the transmit portion of the DIGITAL COMMAND AI Remote Control face to face (as illustrated) with that of another remote control unit, keeping a distance of 1 to 2 inches between them.



- Open the door of the DIGITAL COMMAND AI and press the LEARN button with the tip of a ball-point pen or the like to engage the Learning mode. The LEARN indicator lights and the Learning mode is engaged.



- When the Learning mode is engaged, TV functions cannot be operated with the DIGITAL COMMAND AI Remote Control. To release the Learning mode, press the LEARN button again. (The LEARN indicator will go off.) If no button is pressed, the Learning mode will be canceled automatically after about 1 minute. The LEARN indicator goes off when the Learning mode is released. If the LEARN indicator goes off during the procedure, press the LEARN button first (the LEARN indicator will light), then resume the procedure.



The DIGITAL COMMAND AI Remote Control is provided with LEARNING-function buttons that can be programmed to operate external components, in addition to the normal TV operations, by "learning" functions of another remote control unit. Also, the SYSTEM ON/OFF button turns the power of all the components connected to this TV on or off at the same time, and various buttons adjust the sound tone of components connected to the TV.

- 3 Press a button of your choice (either from among the LEARNING buttons or the VCR control buttons which you want to program). The LEARN indicator blinks once.



- 4 Keep pressing a button you want to be "learned" on another remote control unit until the LEARN indicator blinks three times and then remains lit.



- 5 If you want to program more buttons, repeat steps 3 and 4 for other buttons.  
6 Press the LEARN button again. The LEARN indicator goes off to show that the Learning mode has been released.



Now, the "learned" functions can be performed with the DIGITAL COMMAND AI Remote Control. Try out the operation of the just-programmed buttons.



## 2. Learning functions for VCR recording operations

Use this feature especially when "learning" the recording function of a VCR. There are two methods for VCR recording operations: pressing both the REC and PLAY buttons simultaneously and pressing only the REC button. Either method can be used with this DIGITAL COMMAND AI Remote Control; therefore, choose the method you prefer.

- When "learning" into only the REC button on the DIGITAL COMMAND AI Remote Control the recording function or pressing only the REC button on another remote control

"Learning" the function of the REC button and PLAY button of another VCR remote control into the corresponding REC and PLAY buttons on the DIGITAL COMMAND AI can be performed easily. (See "Basic Learning Functions".)

- When "learning" into only the REC button on the DIGITAL COMMAND AI the recording function of pressing both the REC and PLAY buttons on another remote control

Put the two remote control units face to face.  
Open the door of the DIGITAL COMMAND AI and press the LEARN button. The LEARN indicator lights.  
Press the REC button on the DIGITAL COMMAND AI. The LEARN indicator blinks once.



- 4 Keep pressing both the REC and PLAY buttons of the other remote control unit until the LEARN indicator blinks three times and then remains lit.



- 5 Press the LEARN button to disengage the Learning mode. (The LEARN indicator will go off.)



Now, the recording mode of another VCR can be engaged by pressing only the REC button on the DIGITAL COMMAND AI. Be sure to test the operation.

- When "learning" into both REC and PLAY buttons simultaneously on the DIGITAL COMMAND AI (pressing both simultaneously) the recording function of pressing only the REC button on another remote control unit

Put the two remote control units face to face.  
Open the door of the DIGITAL COMMAND AI and press the LEARN button. The LEARN indicator blinks once.

- Press both REC and PLAY buttons together on the DIGITAL COMMAND AI. The LEARN indicator blinks once.  
Keep pressing the REC button of the other remote control unit to be "learned" until the LEARN indicator blinks three times and then remains lit.

Press the LEARN button to disengage the Learning mode. (The LEARN indicator will go off.)  
Now, the recording mode of another VCR can be engaged by pressing both the REC and PLAY buttons simultaneously on the DIGITAL COMMAND AI. Be sure to test the operation.

- When "learning" into both the REC and PLAY buttons on the DIGITAL COMMAND AI the recording function of pressing both the REC and PLAY buttons of another remote control unit

Put the two remote control units face to face.  
Open the door of the DIGITAL COMMAND AI and press the LEARN button. The LEARN indicator blinks once.

- Press both REC and PLAY buttons together on the DIGITAL COMMAND AI. The LEARN indicator blinks once.  
Keep pressing both REC and PLAY buttons of the other remote control unit until the LEARN indicator blinks three times and then remains lit.

Press the LEARN button to disengage the Learning mode. (The LEARN indicator will go off.)  
Now, the recording function of another VCR's remote control can be performed by pressing both the REC and PLAY buttons on the DIGITAL COMMAND AI. Be sure to test the operation.

## 3. Multi-Learning capability (Sequential programming)

Ordinarily, only one function per button can be "learned". However, with the following LEARNING buttons, a sequence of several different functions can be "learned". After programming them, pressing one of these buttons causes a multiple operation-sequence to be performed automatically. Program them in the same order that you want them to operate.

- "A" to "D" buttons: 10 functions each  
"E" to "L" buttons: 5 functions each  
"SYSTEM ON/OFF" button: 5 functions

- Functionality of buttons, as shown on the previous page, applies to JVC remote control units; other manufacturers' remote control units may be less functional.

- The SYSTEM ON/OFF button has been preset to turn the power of JVC TVs or VCRs on or off. Therefore, if other functions are stored in memory for this button, the original function will become unavailable; press the CLEAR button to restore the original function of this button.

- Put the transmit portion of the DIGITAL COMMAND AI face to face with that of another remote control unit.  
Open the door of the DIGITAL COMMAND AI and press the LEARN button. The LEARN indicator turns on and the Learning mode is engaged.

- Press both the SURROUND and CHANNEL (-) (VCR) buttons of the VCR control section at the same time. The LEARN indicator blinks once. (Multi-learning mode)



- Press a button (A to L button, or the SYSTEM ON/OFF button) into which you want the operation to be learned. The LEARN indicator blinks once and the TRANSMIT indicator lights.



- Keep pressing the button on the other remote control unit which you want to be learned until the LEARN indicator blinks three times first, then lights, after which the TRANSMIT indicator blinks once.



Blinks three times. Blinks once

- Repeat steps 4 to 6 to learn other functions into the multi-learning button.  
Press the LEARN button. The Learning mode is disengaged and the LEARN indicator goes off.

Now, a sequence of 5 or 10 different operations for external components can be performed automatically simply by pressing only this button of the DIGITAL COMMAND AI Remote Control. Be sure to test the operation.

## 4. Other Learning functions

In addition to the learning functions that have been described previously, the DIGITAL COMMAND AI Remote Control is provided with the following functions that can operate AV components connected to the TV.

### SYSTEM ON/OFF button

This button simultaneously turns the power on and off of all the AV components connected to this TV. (Some components may not operate with this button.)

Data which have been preset originally include the functions to turn the power on and off of a TV, VCR, and amplifier. This button can also be used to learn other functions. When you want to perform operations of the AV components other than the JVC products using this button, perform programming again. For programming, refer to "3. Multi-learning functions".

- Self-learning functions (SELF CODE COPY)  
Data which have originally been preset with each button of the DIGITAL COMMAND AI can also be programmed into the "A" to "L" Learning buttons. When this self-learning function is used with multi-learning functions, controlling both the components connected to the TV and the TV itself can be performed by pressing a single button. (Data of the buttons on the upper cover of the DIGITAL COMMAND AI can also be programmed into these buttons.)

### Programming for basic learning functions

- Press the LEARN button to engage the Learning mode.  
The LEARN indicator lights.  
Press a button A to L into which you want to "learn" data. The LEARN indicator blinks once.



- Press the CHANNEL (-) and VOLUME (+) buttons simultaneously. (Self-learning mode)  
The LEARN indicator blinks once.



- Press a button whose data you want to be "learned".  
The LEARN indicator blinks twice.  
After "learning" is accomplished, press the LEARN button to disengage the Learning mode. (The LEARN indicator goes off.)

### Programming for multi-learning functions

- Press the LEARN button to engage the Learning mode.  
The LEARN indicator lights.  
Press both the SURROUND and CHANNEL (-) (VCR) button of the VCR control section simultaneously. (Multi-learning mode)



- Press a button A to L, or SYSTEM ON/OFF into which you want to "learn" data.

The LEARN indicator blinks once.

- Press the CHANNEL (-) and VOLUME (+) buttons simultaneously. (Self-learning mode)  
At this time, both the LEARN and TRANSMIT indicators blink one time each.

- Press a button whose data you want to be "learned".

The LEARN indicator blinks twice and the TRANSMIT indicator blinks once.

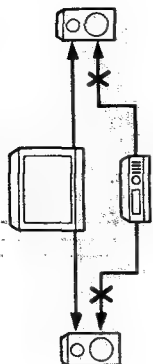
- After "learning" is accomplished, press the LEARN button to disengage the Learning mode. (The LEARN indicator goes off.)

Since the self-learning function can also be performed using the multi-learning mode procedure, both the functions of the other remote control and those of the DIGITAL COMMAND AI can be "learned" into the same button.

- To "learn" other self-learning functions, repeat steps 4 and 6.

# CONNECTING TO EXTERNAL EQUIPMENT

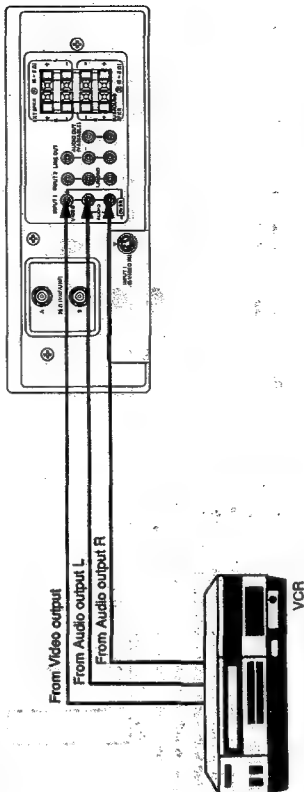
- Prior to making any connections to your TV set, be sure to turn the POWER off.
- For a more detailed understanding of each connection, it is recommended that you read the instruction manual for each connected component.
- If you use video or audio equipment placed too near the Monitor/Receiver, picture and/or sound may become distorted due to interference between these components. In such a case, separate each piece of equipment at a sufficient distance.
- The following shows examples for connecting external equipment.



Note: When S-VIDEO IN connector ● is used, the VIDEO connector function of INPUT 1 becomes inoperable.

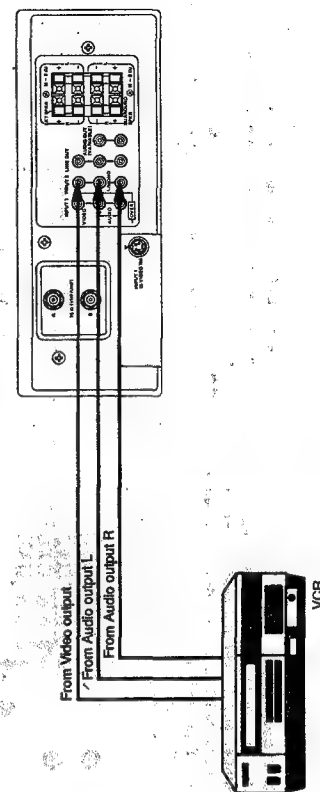
## 1 INPUT 1 connectors

- To view a connected video source, press VIDEO 1 button ● on the Remote Control to engage the VIDEO 1 mode.



## 2 INPUT 2 connectors

- To view a connected video source, press VIDEO 2 button ● on the Remote Control to engage the VIDEO 2 mode.



Note: If the connected video equipment outputs monaural audio, connect to the AUDIO L/MONO (left channel) connector. Sound will be output from both right and left speakers.

before a new one is performed, etc.) In this case, the desired operation might be possible by changing the "learning" sequence.

When many functions have been programmed, a sequential period of time is required to complete transmission of all the "learned" operating signals. (It takes approximately 1 second per function.) Therefore, as long as the TRANSMIT indicator is lit, keep the transmitting window of the Remote Control pointed towards the operating components.

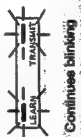
The Learning functions of the DIGITAL COMMAND AI are designed to operate AV appliances only. They are not able to control other equipment, such as air conditioners, etc.

**Blinking of both LEARN and TRANSMIT indicators**  
Shows the status of remote control operations.

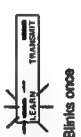
- 1) When both indicators blink twice at the same time: Memory for all buttons is full and, therefore, new functions cannot be learned. If new functions are to be learned, press the CLEAR button first to cancel all of the learned functions, and then re-"learn" the new functions as required.



2) When both indicators blink repeatedly during the Learning mode:  
This happens when buttons which have no learning function are pressed, or when pressing two buttons together other than a combination of REC (O) and PLAY (▷) or REC (O) and PAUSE (■) buttons. The indicators continue blinking while the buttons are pressed. Press proper buttons.



3) When the LEARN indicator blinks once just after replacing the batteries:  
A convenient check of the "learned" data is performed automatically whenever the batteries are replaced. If the "learned" data has not been stored correctly, the LEARN indicator may blink once just after new batteries have been installed into the DIGITAL COMMAND AI. When this occurs, it indicates that all the data have been cleared and re-"learning" is required.



As an aid for remembering, functions have been "learned", write their designations on the provided label and stick it on the Remote Control unit.



**Operating functions for AV components**  
The following buttons that operate the corresponding functions of the DIGITAL COMMAND AI can be programmed to operate JVC AV components connected to this TV.

Button indication	Operating functions for AV components
TV button	Switches the VCR or receiver to the TV mode
VIDEO 1 button	Switches the TV to the VIDEO 1 mode and the receiver to the TV mode.
VIDEO 2 button	Switches the TV to the VIDEO 2 mode and the receiver to the TV mode.
VOLUME - button	Operates Volume - of the receiver
VOLUME + button	Operates Volume + of the receiver
MUTE button	Operates Mute of the receiver

**<Programming>**  
① Press the LEARN button to engage the Learning mode.  
The LEARN indicator lights.

② Keep both the TV and VIDEO 1 buttons pressed until the LEARN indicator blinks.  
When "learning" the same function as that described on a button's:

The LEARN indicator blinks twice then remains lit.  
When the operating functions for AV components have been "learned":

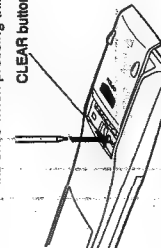
The LEARN indicator blinks three times then remains lit.  
③ With the mode that you want engaged, press the LEARN button to disengage the Learning mode. (The LEARN indicator goes off.)

Now, the "learned" functions can be performed using the DIGITAL COMMAND AI Remote Control. Be sure to test the operation.

Note: Some models among JVC AV components may not be able to be operated with this Remote Control unit.

## 5. Notes

- **CLEAR button**  
For access to the CLEAR button, open the cover of the battery compartment. Pressing this button with the tip of a ball-point pen, or the like, clears all "learned" (programmed) buttons. (All functions of buttons other than the LEARNING buttons will be restored to their original functions.) The LEARN indicator blinks once when pressing this button.



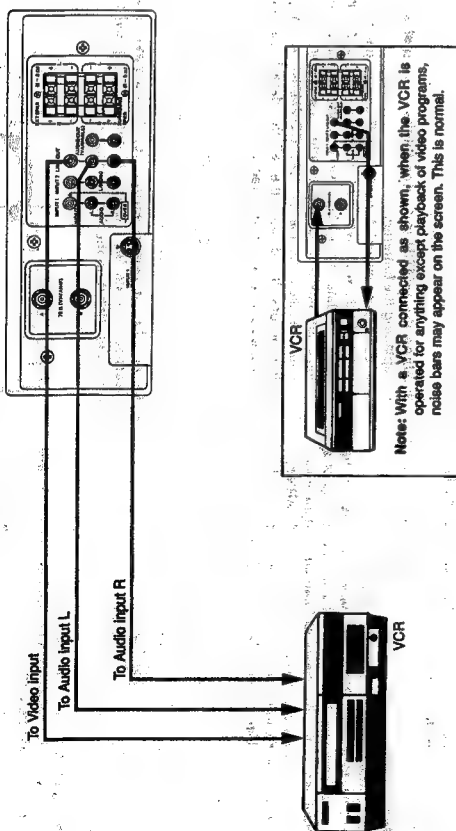
**Replacing the dry-cell batteries:**

After removing the batteries, the "learned" functions are cleared in approximately 10 minutes. (All buttons other than the LEARNING buttons are restored to their original functions.) To retain the "learned" functions, insert new batteries before 10 minutes elapse. (See "BASIC USE OF REMOTE CONTROL UNIT" on page 3.)

**The multi-learning function buttons (A to L buttons, or SYSTEM ON/OFF button) enable several functions to be performed in sequence.** Some functions may not be performed, depending on the "learning" sequence. (This may occur when a relatively long period of time has elapsed after the previous operation has been set to on

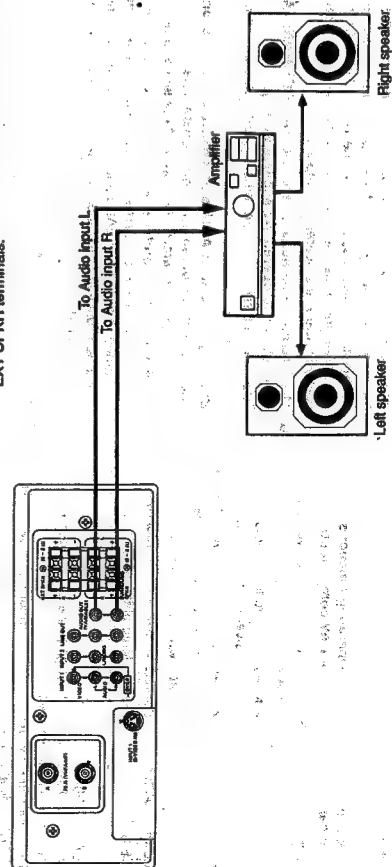
### 3 LINE OUT connectors

- The video and audio signals available at these connectors are the same as the source presently being monitored on the TV.
- This is convenient for VCR connection.



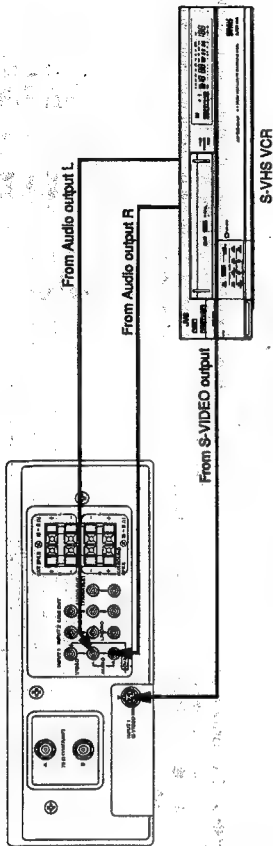
### 4 AUDIO OUT (VARIABLE) connectors

- The audio signals available at these connectors are the same as the audio source of the program being monitored on the TV screen.



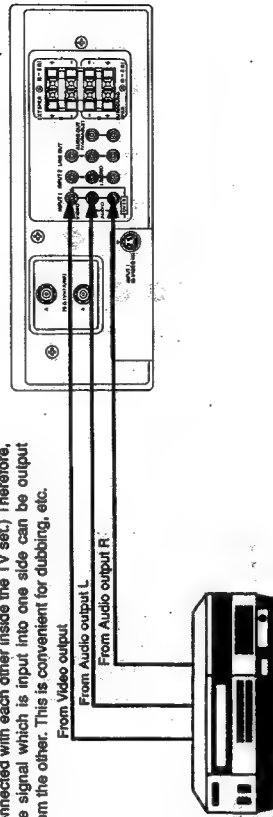
### 5 S-VIDEO IN connector

- S-VIDEO IN connector is for the separated Y (luminance) and C (chrominance) video signals conforming to the NTSC system, ideal for connection of an S-VHS (Super VHS) VCR.
- Connect the audio output cable to AUDIO L/R connectors of the INPUT 1.



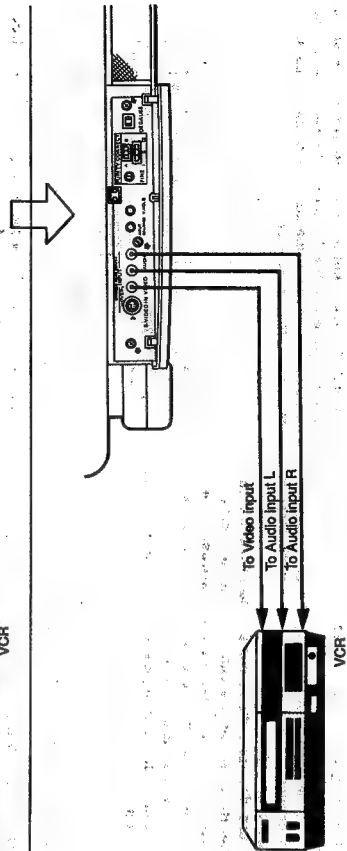
### 6 Bridge-connections

- Both the INPUT 1 connectors and the S-VIDEO IN connector are bridge connected. (Both connectors on the front panel and on the rear panel are directly connected with each other inside the TV set.) Therefore, the signal which is input into one side can be output from the other. This is convenient for dubbing, etc.



Note: Do not input signals simultaneously into both the front and rear connectors.

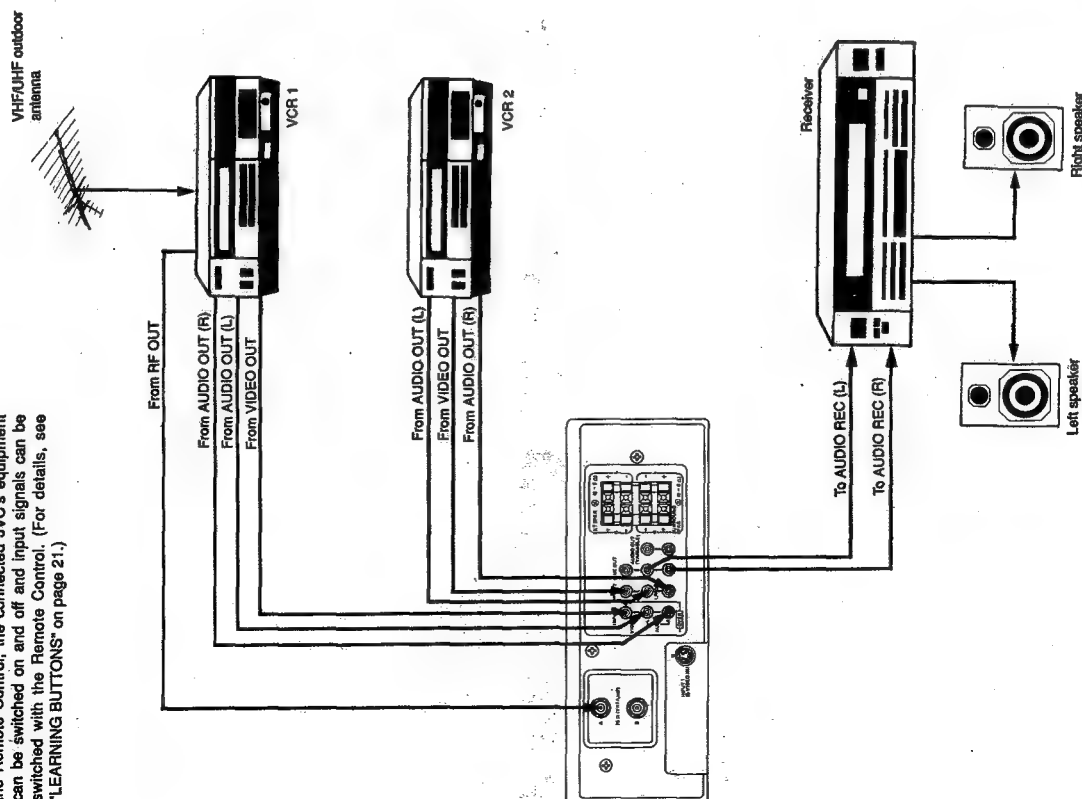
- Press VIDEO 1 button on the Remote Control to engage the VIDEO 1 mode to view pictures from the S-VHS VCR.
- Note: When S-VIDEO IN connector is used, the VIDEO connector function of INPUT 1 becomes inoperable.



## 7 Audio/video equipment system connection example

- Various pieces of audio and video equipment can be plugged into the connectors on the back of the TV.
- By using the audio/video equipment control feature of the Remote Control, the connected JVC's equipment can be switched on and off and input signals can be switched with the Remote Control. (For details, see "LEARNING BUTTONS" on page 21.)

Note: See the instruction manual of the equipment to be connected.

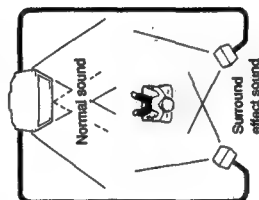
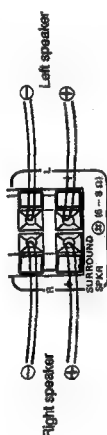


## 8 Listening to Surround Sound

- Using the surround systems, you can listen to the sound with full concert-hall presence.

### Connection and setting

- Connect the speakers to the SURROUND SPKR terminals.



### INPUT BALANCE knob

To adjust the balance of the right and left Dolby surround channels output from speakers connected to the TV set:

1. Play back a DOLBY SURROUND video source containing dialog.
2. Turn off the sound of the front channel speakers.
3. Turn the INPUT BALANCE control knob (right or left) until the volume of the voices heard on both surround speakers is minimized.
4. Restore front channel speaker volume to a comfortable level.

Set surround channel volume to a level at which the surround effect begins to be perceptible.

- The INPUT BALANCE control may be left in its click position with good results on the majority of source. When surround effect is not being used, turn the knob back to its center click position.

### Notes:

- Perform sound adjustment while checking the surround sound effect.
- When the SURROUND OFF mode is engaged, no surround-effect sound is available, although normal sound can be heard from the speakers connected to the SURROUND SPKR terminals.
- The audio from the speakers connected to the EXT SPKR terminals remains at the volume level that was set when balance adjustment was made between the normal sounds (i.e. the sounds from the speakers in front of you) and the surround effect sounds (i.e. the sounds from the speakers in back of you) in the SURROUND ON mode (DOLBY or SPATIAL). If the audio volume level is lower than preferred, either press the VOLUME (+) button, or re-adjust the audio balance so the sound from the speakers connected to the EXT SPKR terminals will be louder.
- (For the speaker balance between the normal and surround effect sounds, see "SURROUND Button" on page 20.)
- The center speaker sound is monaural.
- The on-screen displays described below on the left are not affected by either the VOLUME (+/-) buttons or the L/R-channel balance control under the AV Status Memory menu.

### Mode switching

- In order to listen to the sound of video tapes or videodiscs which have been recorded with the DOLBY SURROUND system, set to the DOLBY SURROUND mode by using SURROUND button (S) on the Remote Control. In order to listen to normal stereo or monaural sound more effectively, set to the SPATIAL SURROUND mode.
- When not using the surround effect, set to the SURROUND OFF mode.
- "SPATIAL SURROUND" can be performed only with the speakers connected to the EXT SPKR terminals.

### Adjustment

- While "DOLBY SURROUND" or "SPATIAL SURROUND" is being displayed on the screen, press FUNCTION BACK button (F) to select the SURROUND speakers in back of you; press FUNCTION FORWARD (F) to select the center speaker on the TV front panel for adjusting the volume. (Either selected item below will turn magenta color.) Press FUNCTION (+) or (-) to increase or decrease the volume, according to your preference.

Volume adjustment for "REAR LEVEL" (surround speakers)



Volume adjustment for "CENTER LEVEL" (center speaker)

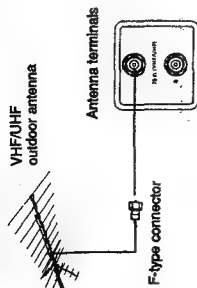




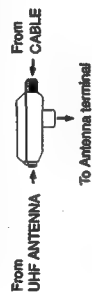
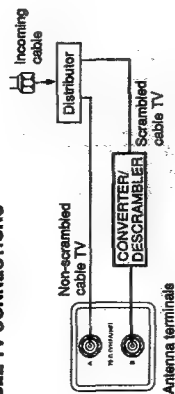
## ANTENNA/CABLE TV CONNECTIONS

### ANTENNA CONNECTIONS

- An outdoor antenna is recommended for good TV picture reception. (For installation of the outdoor antenna system, consult your local dealer.)
- Some cable companies require a converter box to receive all available programs. Others may require it for subscription or "premium" programming. Consult your local cable company for correct installation.
- Mode selection of "CABLE A" (non-scrambled cable TV) and "CABLE B" (scrambled cable TV) is performed by pressing ANT/CABLE button ● on the Remote Control (or the FUNCTION and LEVEL/CHANNEL (←/→) buttons on the front panel).
- When connecting both a cable (75-ohm coaxial) and a UHF antenna (300-ohm feeder), use the optional antenna mixer (CE41467) to make a single connection.

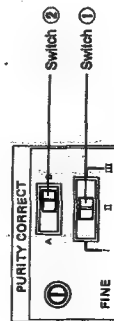


### CABLE TV CONNECTIONS



## PURITY CORRECTION

Since this TV set's large picture tube is likely to be affected by the earth's magnetism, it is necessary to adjust the monitor's purity during installation. (Be sure to perform this adjustment before turning power on.)



- **Original correction**  
Correct the purity using the provided purity compass. For correction method, refer to instructions of the provided purity compass.
- **Quick correction**  
This method is performed without using the provided purity compass. It is effective when installing the TV set at a place where a magnetic field is stable, in a wooden house, etc.  
1. Place the monitor on a firm surface where you actually intend to use it.  
2. Check the facing direction of the monitor.  
(The facing direction of the monitor corresponds to that of the monitor's picture tube.)  
3. Set **PURITY CORRECT** switches ① and ② on the front panel according to the following table. (For example, when the monitor faces North, set Switch ① to "I" and Switch ② to "A".)

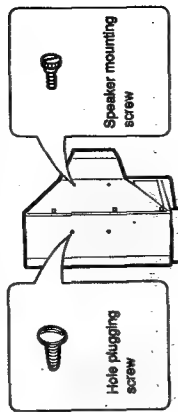
Facing direction	Switch 1	Switch 2
North	I	A
Northeast	II	B
East	III	A or B
Southeast	III	B
South	III	A
Southwest	II	B
West	I	A or B
Northwest	I	B

**Note:** In a building constructed of reinforced concrete or a place near high-tension wires, etc., there is a possibility of a magnetic field which is unstable. Since proper purity correction cannot be obtained using the "Quick Correction" method when installing the monitor in such a place, correct the monitor using the provided purity compass.  
• If correct colors cannot be obtained with the image displayed on the screen, even after purity adjustment has been performed, press DEGAUSS button ● (For details, see "DEGAUSS Button" on page 21.) If the same phenomenon occurs even after pressing the DEGAUSS button, consult your local dealer.  
**Note:** FINE adjustment is to be performed only by service personnel. Do not insert an object in the fine adjustment hole.

## SPEAKER INSTALLATION

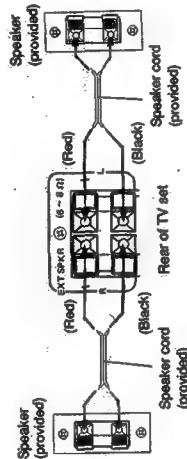
### 2. Speaker installation

- 1) Select the position at which the speakers are to be installed, whether at the sides or at the back of the TV set.
- 2) Screws to plug screw holes are inserted into a pair of speaker installation holes on either side of the TV when the set is unpacked. Screws for mounting speakers on the back of sides of the TV are also inserted in a pair of holes on either side. Use all the screws for their intended purpose: mounting screws for mounting speakers, plugging screws for covering the remaining holes.

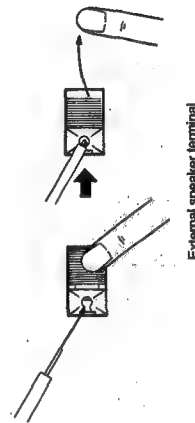


1. **Connecting the speakers to the TV set**  
Connect the rear terminals of speakers to EXT SPKR terminals ● on the back of the TV using the provided speaker cords.  
Connect each red speaker cord to the corresponding "+" terminals.  
Connect each black speaker cord to the corresponding "-" terminals.

- 3) Install the speakers by hanging them on the installation screws.



• When connecting the speaker cord to the EXT SPKR terminal, first, press the terminal tab down, then insert the tip of speaker cord into the hole of the terminal. Then, release the lever leaving the speaker cord inserted into the hole.

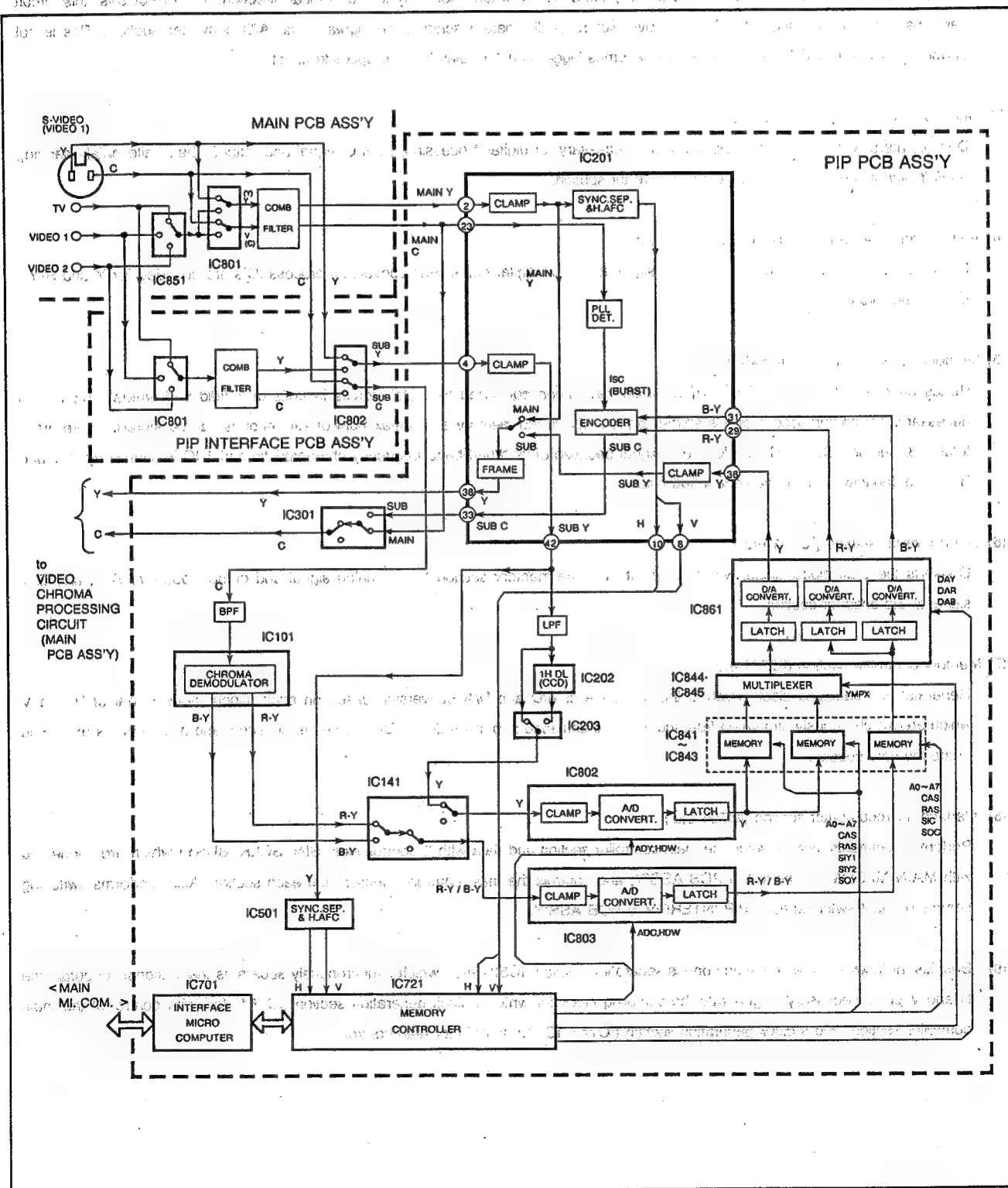


## TECHNICAL INFORMATION

## ■ CIRCUIT ANALYSIS

● Digital VIDEO processing unit [ PIP(Picture in Picture) PCB Ass'y ]

Sends usual analog image signals to the circuits which consist of sections such as the encoder, decoder, A/D converter, memory, D/A converter and memory controller, performing digital processing and creating effective image pictures such as BASIC PIP, SPRIT, RETRO PLAY, FREEZE, DIGITAL STROBE, and MULTI CHANNEL INDEX.



# ●Circuit structure

## (1) Encoder section (IC201, IC301 etc.)

Performs coding from digitally processed R-Y and B-Y signals to a C(chrominance) signal, output switching of Y(luminance) signal and C signal to MAIN PICTURE and SUB PICTURE, output switching for creation of no signal section for the frame of the SUB PICTURE, and creation of horizontal and vertical pulses which are necessary to generate the sampling clock for memory read.

## (2) Vertical filter section (IC202, IC203 etc.)

The processed Y signal tends to deteriorate in picture quality when seen only in the vertical direction. To correct this, this circuit performs a 1H delay using a CCD to improve picture quality before sending the signal to the A/D converter section. This is not performed during FREEZE since the picture becomes bigger and 1H delay has the opposite effect.

## (3) Decoder section (IC101, IC141 etc.)

Demodulates R-Y and B-Y signals, which are necessary for digital processing, from C signal and outputs them, alternately sending an R-Y signal and B-Y signal to the A/D converter section.

## (4) A/D converter section (IC801, IC802, IC803 etc.)

Converts each Y and R-Y, and B-Y analog signal to a 6-bit digital signal. A/D conversion process IC's are provided for Y and R-Y / B-Y, respectively.

## (5) Memory section (IC841 ~ IC845 etc.)

Reads each Y and R-Y, and B-Y signal which have been converted to digital signals in units of 1 field and writes (outputs) as necessary. 1/9 compressed image is stored sequentially in the memory and a maximum of 2.4 seconds can be stored. There are a total of 3 memory ICs; 2 ICs are for the Y signal because of its broad-band frequency characteristic and 1 IC is shared by R-Y and B-Y. The capacity of each memory is 500 bits.

## (6) D/A converter section (IC861 etc.)

Converts the 6-bit digital signal which is output from the memory section to an analog signal and outputs each Y, R-Y, and B-Y signal to the encoder section.

## (7) Memory controller section (IC721 etc.)

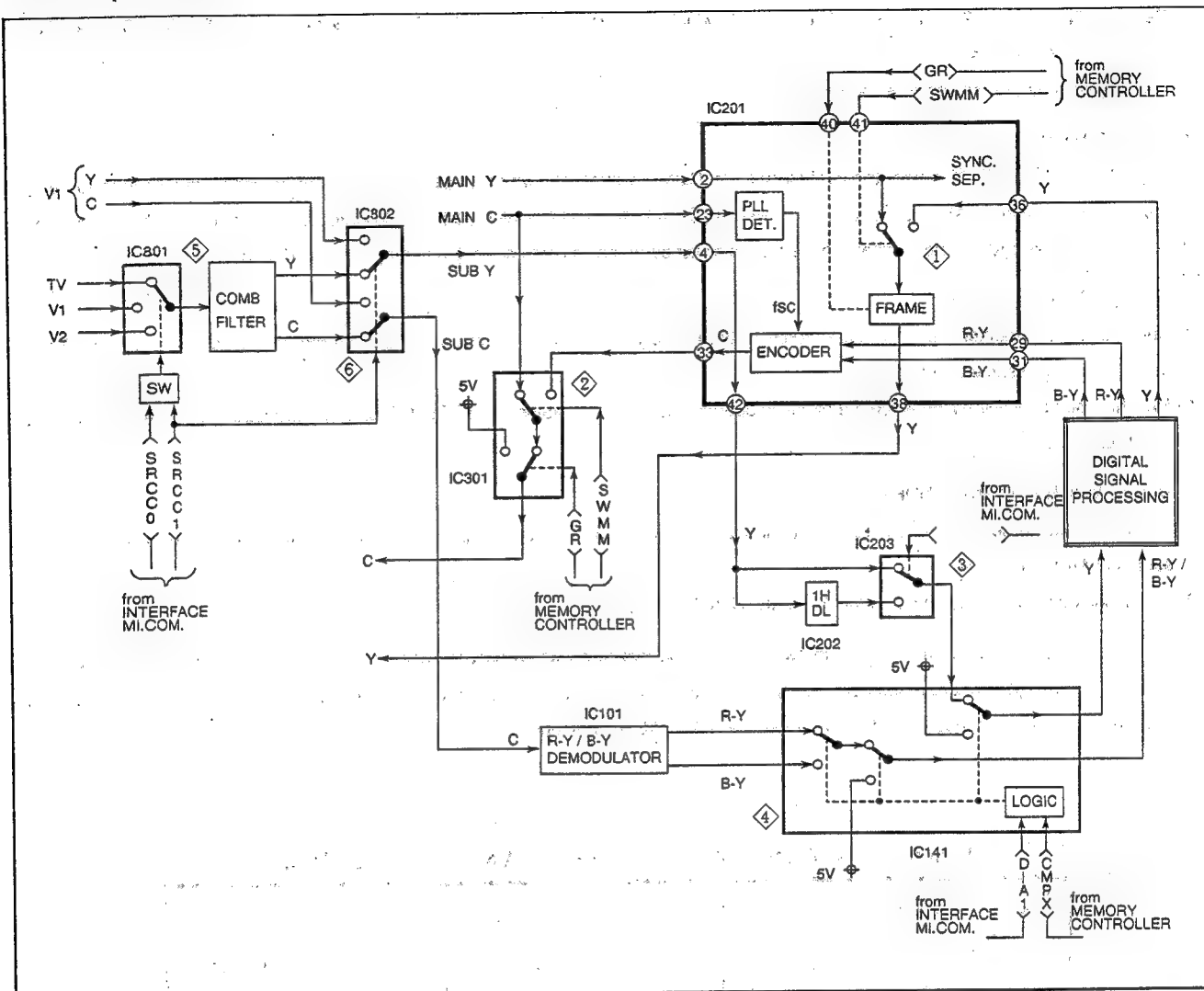
Generates the sampling clock which is the reference of A/D and D/A conversion based on each synchronous signal of H and V which are synchronously separated from the Y signal and send it to the A/D and D/A converter sections, and also controls read/write of the memory section.

## (8) Interface microcomputer section (IC701 etc.)

Performs communication between the main controller section and data with 3 control lines (SIN, SCLK, BUSY) which are connected with MAIN MI.COM in the MAIN PCB ASS'Y, and controls the main controller section and each section. Also, performs switching control for input switching IC in PIP INTERFACE PCB ASS'Y.

## (9) Besides the above, there is a synchronous separation section (IC501 etc.) which synchronously separates the Y signal to obtain the H and V pulse necessary to generate the sampling clock for write, a clock generation section (IC761) for write control of the main controller section, and a clock generation section (IC741, IC742, IC743) for read control.

## ● Circuit operation outline



## (1) During BASIC PIP

- 1) A MAIN Y signal is input to IC201 ② pin and SUB Y signal is input to ④ pin, then they are sent to the MAIN/ SUB switching circuit (①) after clamping; usually it is switched to the MAIN side here. At this time, it is switched to the SUB side only at the time of the SUB picture output, and the signal which was output from ⑫ pin and was digitally processed in output. The frame switching circuit switches so that it does not output when corresponding to the frame of the SUB picture to create the black frame of the SUB picture, finally outputting from ⑩ pin.
- 2) The C signal is output after MAIN/SUB picture output switching and switching of the signal output at frame generation time of the SUB picture in IC301 (②) are performed. The Y and C signals are both switched by SWMM and GR from the main controller section (IC721).
- 3) Switching of MAIN picture and SUB picture (= SWAP) is performed by IC801 (⑤) in the PIP INTERFACE PCB ASS'Y and IC851 in the MAIN PCB ASS'Y based on input switching (②, ③ pins) of SRCCO (③ pin) and SRCC1 (② pin) of the INTERFACE MI.COM. (IC8701) and MAIN MI.COM. (IC1701).

## (2) During SPRIT

- 1) IC801 (⑤) Switches the selected MAIN picture (left side) and SUB picture (right side) at that time every 3 lines, and both are digitally processed and output. At this time, (①) and (②) switches are kept at the SUB side so that the signal is not output for the blank part of the upper/lower screen.
- 2) Switching of MAIN and SUB picture is the same as for BASIC PIP.

## (3) During RETORO PLAY

- 1) Sequentially outputs 1/9 compressed picture signals which have been previously stored in the memory by dividing into 9 levels from the picture 2.4 seconds before.
- 2) Other operations are the same as for BASIC PIP.

## (4) During FREEZE

- 1) Using SRCC0 and SRCC1 from the INTERFACE MI.COM., IC801(◇), which usually selects the SUB picture, is switched to select the input mode of the MAIN picture, and the Y switch (◇) in IC201 and C switch (◇) in IC301 are also kept at the SUB picture side.
- 2) At this time, IC203(◇) of the vertical filter section is switched to the OH side so that 1H delay is not performed.

## (5) During DIGITAL STROBE

- 1) Sends one after another the 1/9 picture stored in the memory and outputs the picture of the moving image for only the last picture (right bottom), the same as PIP.
- 2) Switching status of the switch when the circuit is operating is the same status as at FREEZE time except IC203(◇) is switched to the 1H DELAY side.

## (6) During MULTI CHANNEL INDEX

- 1) Every time station selection of the tuner is performed, outputs corresponding 1/9 picture sequentially with the control signal which is sent from MAIN MI.COM.
- 2) The circuit operation is the same as for DIGITAL STROBE.

※ IC141(◇) only operates with 5V at mode switching time so that noise which occurs during multiplexing of R-Y and B-Y signals and switching of the digital picture mode does not appear on the picture. IC802 switches to either the composite input or Y/C separated input with the existence of connection to S-VIDEO terminal when VIDEO 1 is input.

Switching status of each digital picture(Ex. MAIN = TV SUB = VIDEO1)

DIGITAL MODE \ SW. IC	1 IC201 (Y)	2 IC301 (C)	3 IC203 (1H DL)	5 IC801 (SUB)	IC852 (MAIN)
BASIC PIP	MAIN or SUB	MAIN or SUB	1H	V1	TV
SPRIT	MAIN or SUB	MAIN or SUB	1H	TV or V1	— (TV)
RETRO PLAY	MAIN or SUB	MAIN or SUB	1H	TV	TV
FREEZE	SUB	SUB	0H	TV	— (TV)
DIGITAL STROBE	SUB	SUB	1H	TV	— (TV)
MULTI CHANNEL INDEX	SUB	SUB	1H	TV	— (TV)

&lt; TABLE 1 &gt;



# INSTALLATION

## ■ INSTALLATION AND ADJUSTMENT

In order to correct irregular color due to the effect of earth magnetism inherent to a large scale CRT, be sure to set the PURITY CORRECT switch at the time of installation. Meanwhile, be sure to perform setting before turning on the power supply. Should the power supply be turned on, perform setting after turning it off once, and turn it on again after setting.

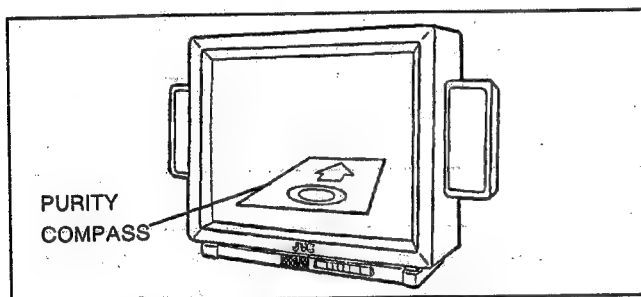
## ■ PURITY CORRECT SWITCH SETTING PROCEDURE

Although two setting procedures are available, set the switch using the attached PURITY COMPASS to ensure correct switch setting. The switch should be adjusted according to this method particularly at a place where the magnetic field can possibly be disturbed in a building of reinforced concrete construction and due to high voltage line, etc. existing adjacent to the TV set. It is also possible to adjust the switch with a simple method based on the direction of the TV set. This method is applicable in wooden housing and at a place where the magnetic field is stable.

### 1. SETTING PROCEDURE WITH PURITY COMPASS

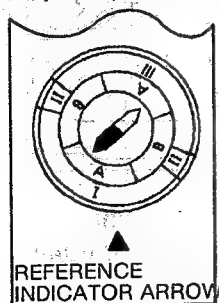
#### Setting method

- 1) Determine the setting position of the TV set.
- 2) The specified tip of the PURITY COMPASS attached to the TV set should be put to the center of the CRT as indicated below.



- 3) While turning the rotary disk of the PURITY COMPASS, align the "◆" mark of the magnetic needle to the "◆" mark of the printed section, and read the symbols (A, B, I, II, and III) indicated by the reading arrow (▲).
- 4) Set the PURITY CORRECT switch (A, B, I, II, and III) on the front surface of the TV set according to the read symbols.

#### ● Example of PURITY CORRECT switch setting



PURITY COMPASS

Read  
(I and A)

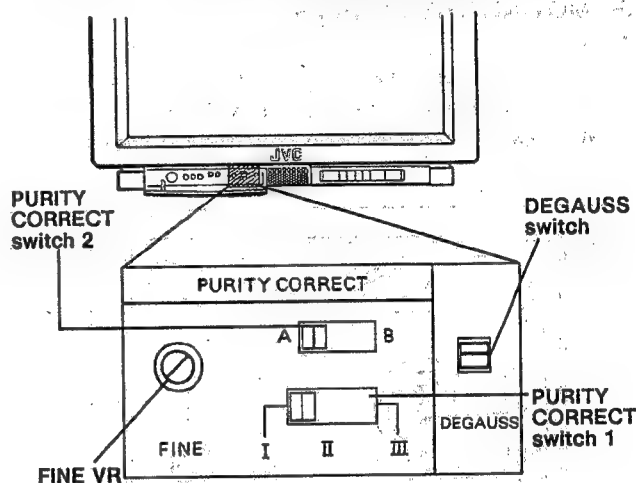
#### ● PURITY CORRECT switch

- (1) Set the PURITY CORRECT switch 1 to I.
- (2) Set the PURITY CORRECT switch 2 to A.

## 2. METHOD OF SETTING THE DIRECTION OF TV SET

- 1) Install the TV set at a place where it is actually used.
- 2) Confirm the direction of the TV set (the facing direction of CRT.)
- 3) Select the switches 1 and 2 by referring the table below.

Direction of TV set (the facing direction of CRT)



Direction of TV set	Switch 1	Switch 2
North	I	A
Northeast	I	B
East	II	Either A or B is OK.
Southeast	III	B
South	III	A
Southwest	III	B
West	II	Either A or B is OK.
Northwest	I	B

Select the switches as follow in the case of south direction:

Switch 1: III

Switch 2: A

#### [Adjustment of FINE volume and DEGAUSS switch]

- After switch setting, turn on the power supply and confirm the purity. In case correction is insufficient, set the purity to an optimal point with the FINE volume. Subsequent to the above setting, moreover, be sure to turn on the DEGAUSS switch to degauss the CRT.

#### Cautions:

After setting, be sure not to change the setting direction of the TV set. If the direction has been changed, the TV set must be set again.

# SPECIFIC SERVICE INSTRUCTIONS

## DISASSEMBLY PROCEDURE

### REMOVING THE REAR COVER

1. Unplug the power supply cord and remove the fifteen screws **A** shown in Fig. A.
- \* when reinstalling the rear cover, carefully push it inward after inserting the chassis into the rear cover groove.

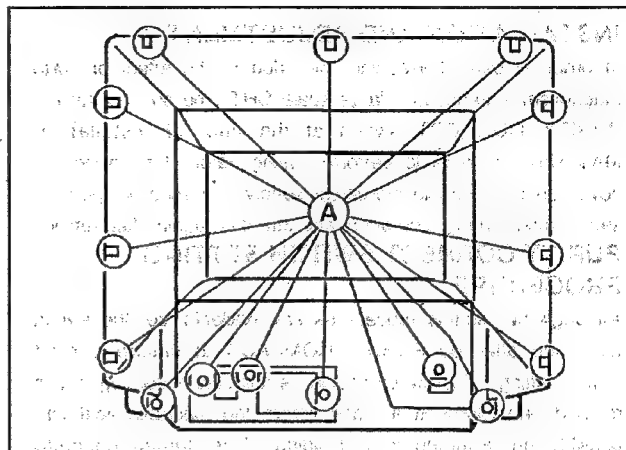


Fig. A

### REMOVING THE CHASSIS

- \* After removing the rear cover.
1. Remove the three screws marked **A** shown in Fig. B.
2. Then loosen the screw marked **B** shown in Fig. B.
3. Withdraw the chassis backward arrow direction. (Fig. C)

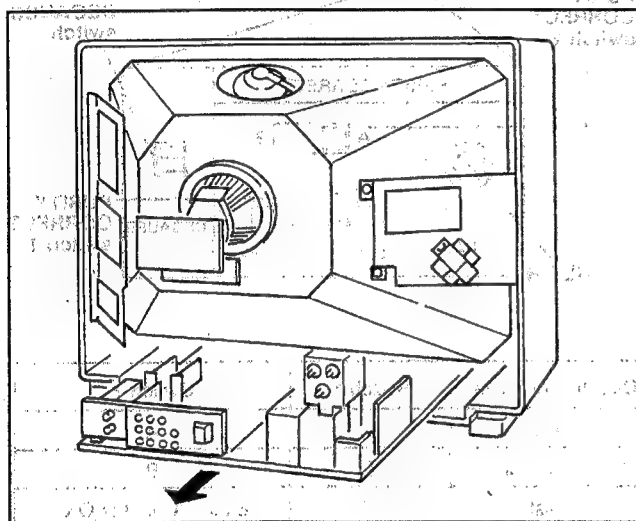


Fig. C

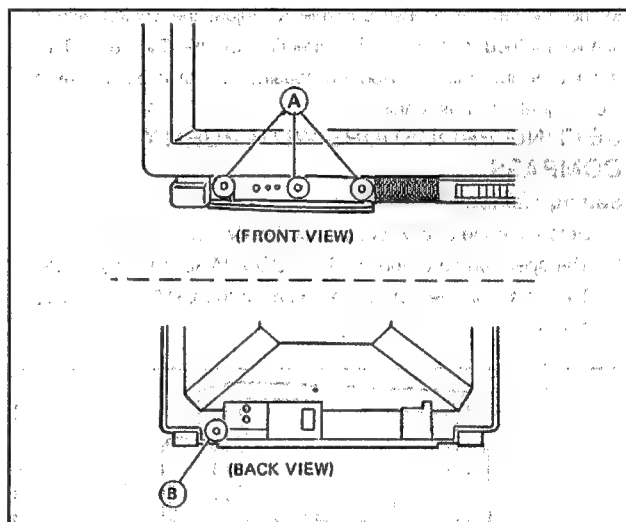


Fig. B

### REMOVING THE AUDIO, PIP MODULE, PIP INTERFACE & D.B.F. PC BOARD

- \* After removing the rear cover.
1. Disengage the claws and remove the PIP PC BOARD from the holder.
2. Then remove the eight screws marked **A** and **B** shown in Fig. D.
3. Detach the AUDIO, PIP INTERFACE and D.B.F. PC board by pushing claw to the arrow direction.

### REMOVING THE SHIELD COVER

- \* After removing the chassis.
1. Remove the anode cap, CRT SOCKET PC BOARD, CRT grounding wire, connectors, and others.
2. Loosen four screws marked **C** shown in Fig. D and detach the shield cover by pushing it to the rear while lifting it.

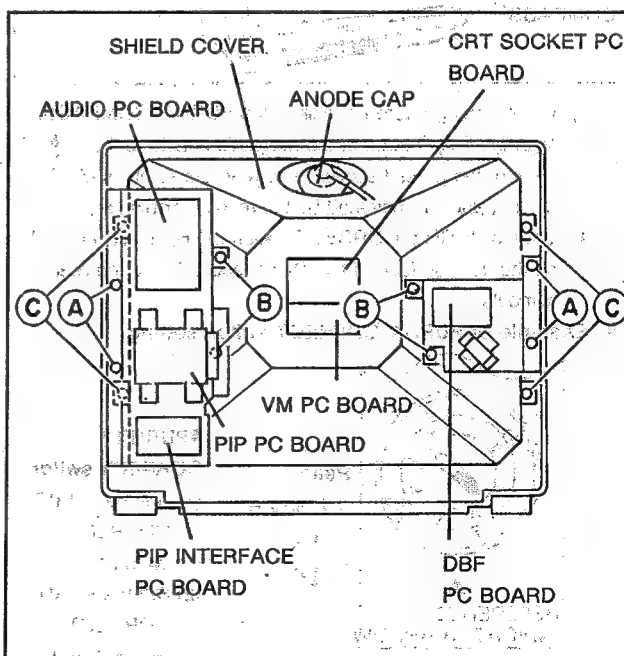


Fig. D

## SETTING UP THE CHASSIS FOR CHECK/REPAIR

As shown Fig.E, set the removed chassis upright. When conducting a check with power supplied, be sure to confirm that the CRT earth wire is connected to the CRT socket board and the chassis.

## WIRE CLAMPING AND CABLE TIES

Be sure to clamp the wire.

Never remove the cable tie used for tying the wires together.

Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

## REMOVING THE CRT.

- Replacement of the CRT should be performed by two or more persons.
- After removed the rear cover, chassis, shield cover and D.B.F. & audio P.C.Board etc.,
- 1. Putting the CRT change table on soft cloth, the CRT change table should also be covered with such soft cloth. (shown in Fig. G)
- 2. While keeping the face surface of CRT down, mount the TV set on the CRT change table well balancedly.
- 3. Remove four nuts marked by arrows shown in Fig. F. with a box type screw driver as shown in Fig.F.
- Since the cabinet will drop when the nuts have been removed, be sure to support the cabinet with hands.
- 4. After four the nuts have been removed, put the cabinet slowly on cloth (At this time, be careful so as not to damage the front surface of the cabinet) showing Fig.H.
- The CRT should be assembled according to the opposite sequence of its dismounting steps.
- \* The CRT change table should preferably be smaller than the CRT surface, and its height be about 35cm.

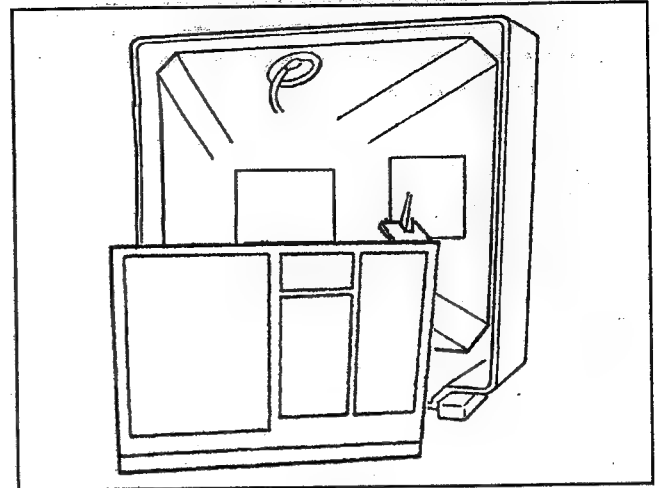


Fig.E

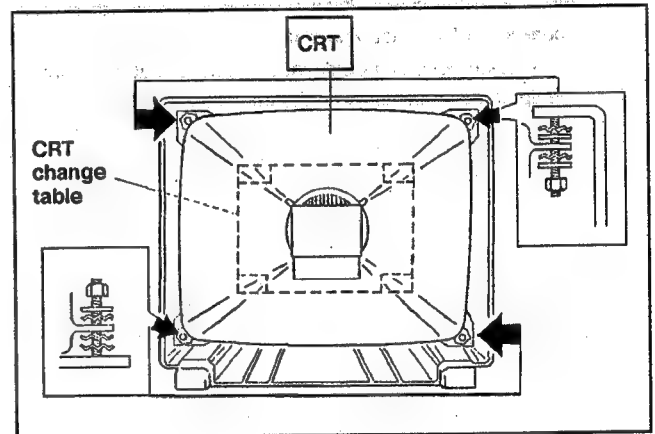


Fig.F

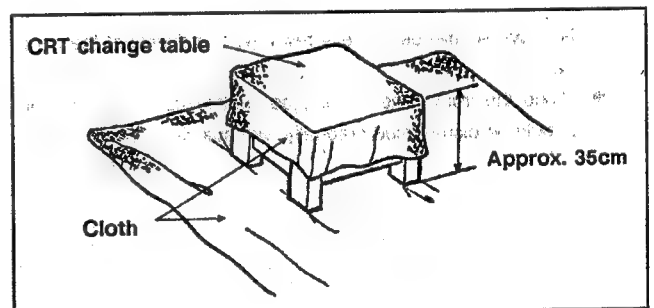


Fig.G

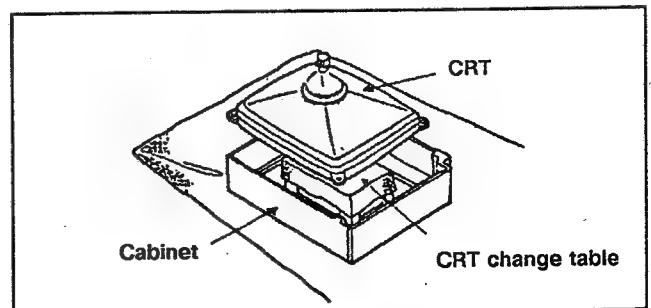
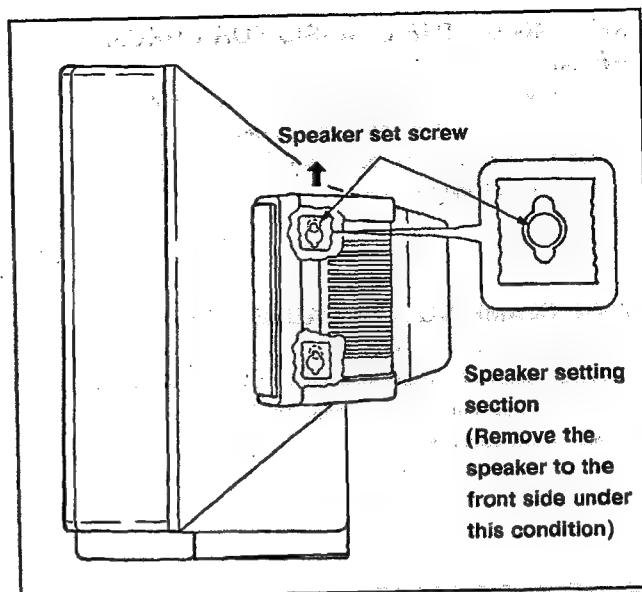


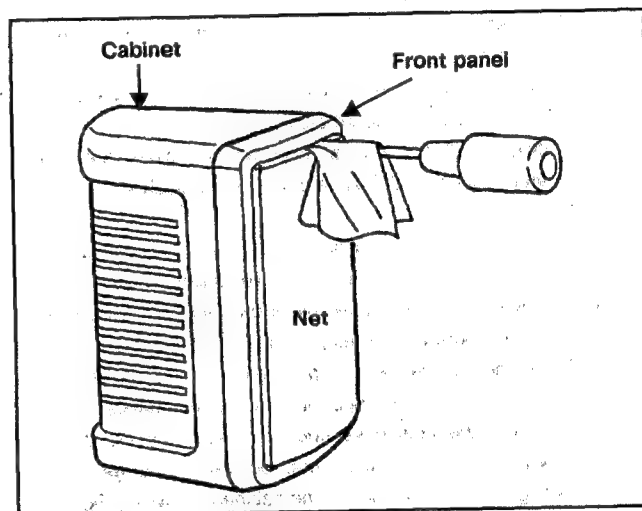
Fig.H

**SPEAKER BOX DISMOUNTING METHOD**

1. Remove the speaker cord from the speaker terminal.
2. While raising the speaker box a little bit, remove the box to the front side as it is.

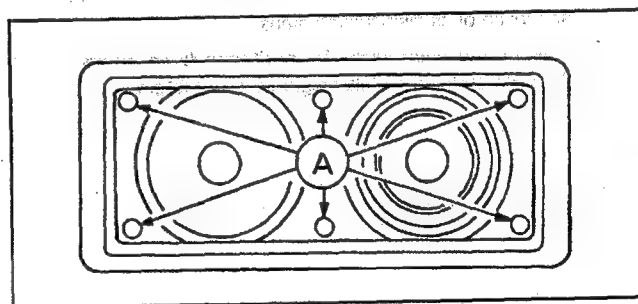
**SPEAKER DISMOUNTING METHOD**

1. Insert a minus screw driver between the front panel and speaker net (after applying cloth, etc. to prevent damage to the speaker box), and dismount the speaker net by drawing the tip of the screw driver to the front side.

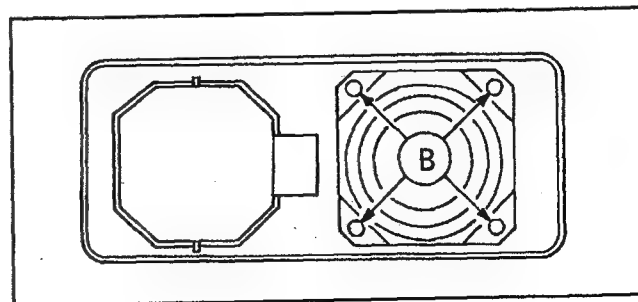


2. Remove six pieces of the screws ④, and dismount the front panel.

- Since the front panel is plugged tightly into the cabinet, it should be dismounted gradually with sufficient care.



3. Remove four pieces of the screws ⑤ fixing the speaker.

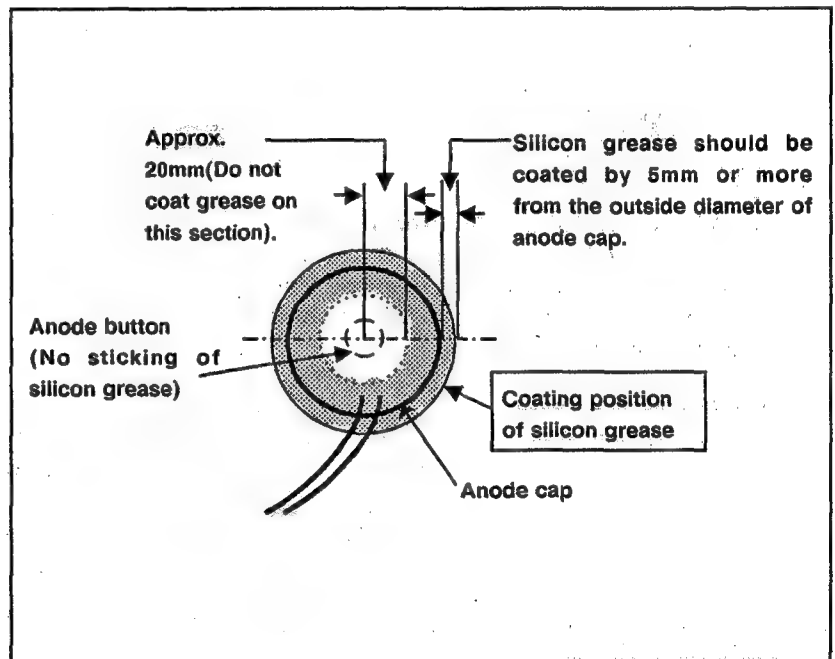
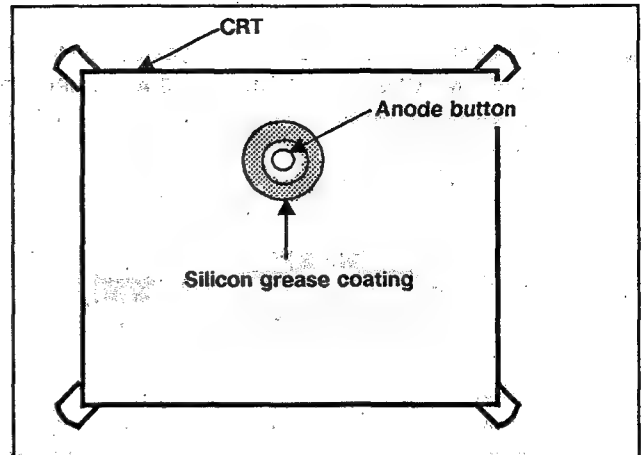


### COATING OF SILICON GREASE FOR ELECTRICAL INSULATION ON THE CRT ANODE CAP SECTION

- Subsequent to replacement of the CRT and HV transformer or repair of the anode cap, etc. by dismantling them, be sure to coat silicon grease for electrical insulation as indicated in the diagram on the right side.

1. Wipe around the anode button with clean and dry cloth.
2. Coat silicon grease on the section around the anode button. At this time, take care so that any silicon grease does not stick to the anode button.

★ Silicon grease product No.: KS - 650N



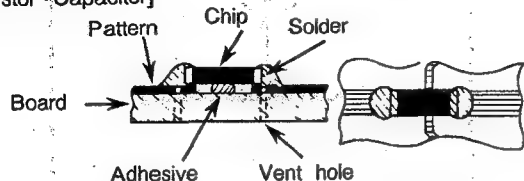
## REPLACEMENT OF CHIP COMPONENTS

- CHIPS ARE NOT USED ON CERTAIN MODELS. REFER TO THE DESCRIPTIONS ON THIS PAGE ONLY WHEN WORKING ON MODELS ON WHICH CHIPS ARE EMPLOYED.

Replacement of the chip on printed circuit board can be performed easily as follows.

### 1 When mounted

[Resistor Capacitor]

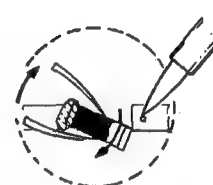
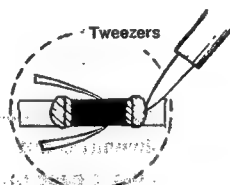
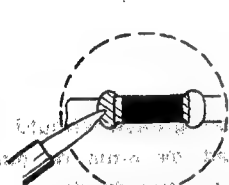


### 2 Removal of the chip

- (1) Remove either of the soldered contacts.

- (2) Hold the chip with tweezers and remove the other contact.

- (3) Work the chip free from the adhesive with tweezers.

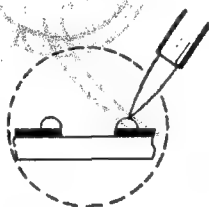


### 3 Preheating and soldering of chip pieces

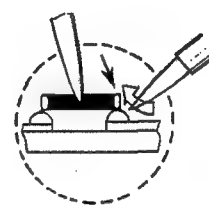
Be sure to preheat chip pieces (except the transistor) especially the capacitor before soldering with hot air, about 150°C (hair dryer or such can be used) for about 2 minutes. Then, immediately solder with an iron of about 30W.

### 4 Replacing the chip pieces

- (1) Apply the solder to the board first.



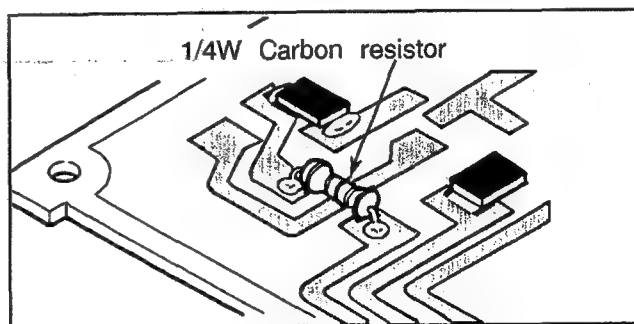
- (2) Hold the chip with tweezers and solder it in place, hold the iron at a 45° angle when soldering.



- Discrete parts can be substitutionally mounted as shown in the figure on the right.

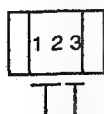
Mounting is also possible by passing the wires from the board front side (parts side) through the chip soldering hole (vent hole of registration part). Substitute parts are as follows.

- Chip Metal Glaze Resistor
  - Carbon Resistor 1/4W ±5%
- Chip Ceramic Capacitor
  - Ceramic Capacitor 50V ±5%



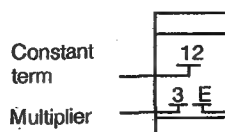
- Decoding of chip parts constant terms

< Chip Metal Glaze Resistor >



Constant Multiplier term  
 $12 \times 10^3 = 12000\Omega$   
 $= 12k\Omega$

< Chip Ceramic Capacitor >



Constant term  
 $12 \times 10^3 = 12000pF$   
 $= 0.012\mu F$

K, M, Z, P . . . . . Tolerance of ordinary type  
 C, P, R, S, T, U . . . . . Temperature coefficient of temperature compensation type

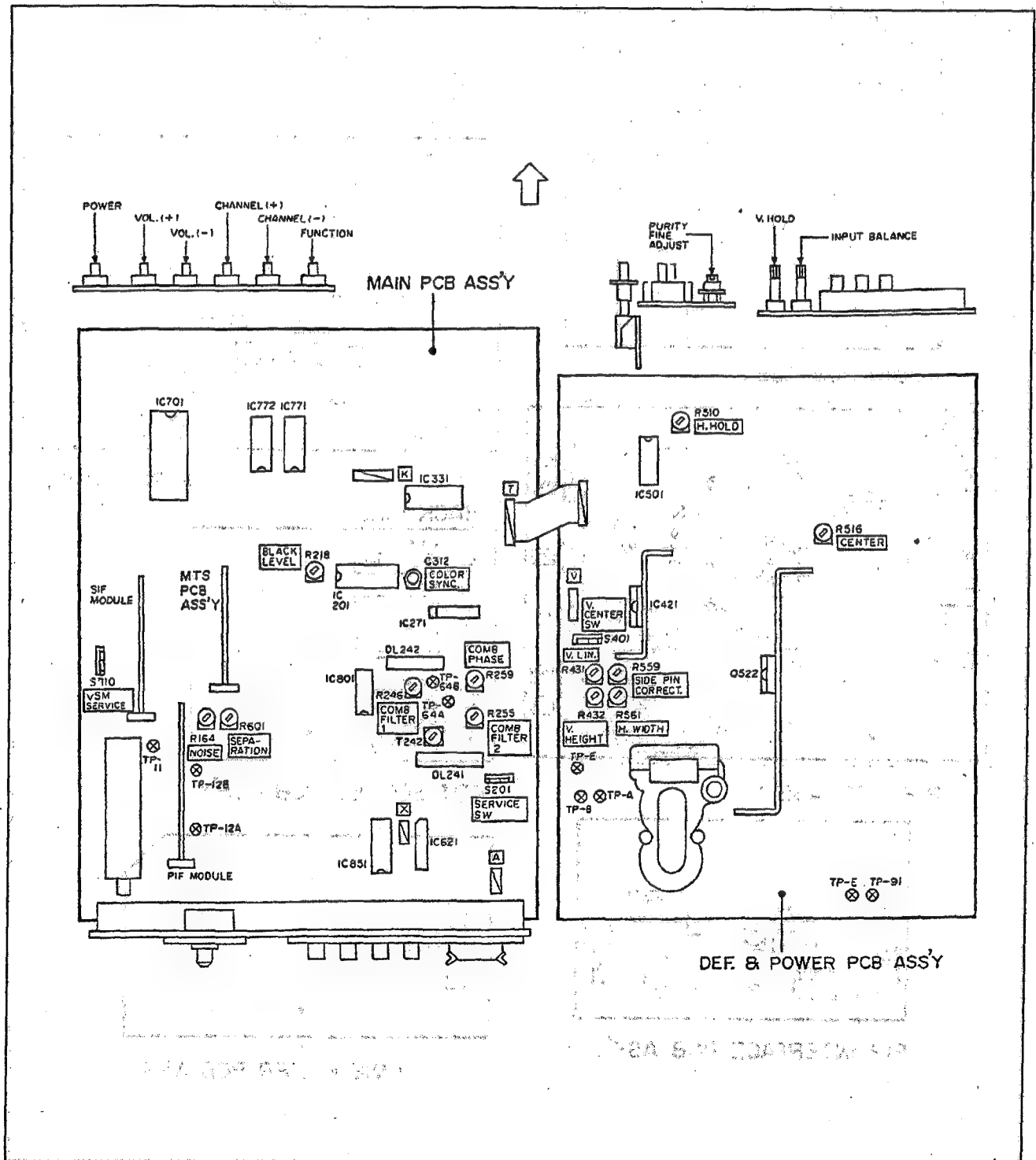


# SERVICE ADJUSTMENTS

## TOOLS AND FIXTURES FOR ADJUSTMENT

- DC VOLTMETER
- OSCILLOSCOPE
- PATTERN GENERATOR (NTSC)
- TV MULTI. CHANNEL SOUND GENERATOR.
- FREQ. COUNTER

## ADJUSTMENT LOCATION





# HOW TO CHECK THE HIGH VOLTAGE HOLD DOWN CIRCUIT

## 1. HIGH VOLTAGE HOLD DOWN CIRCUIT

After repair of the high voltage hold down circuit shown in Fig. 1.  
This circuit shall be checked to operate correctly.

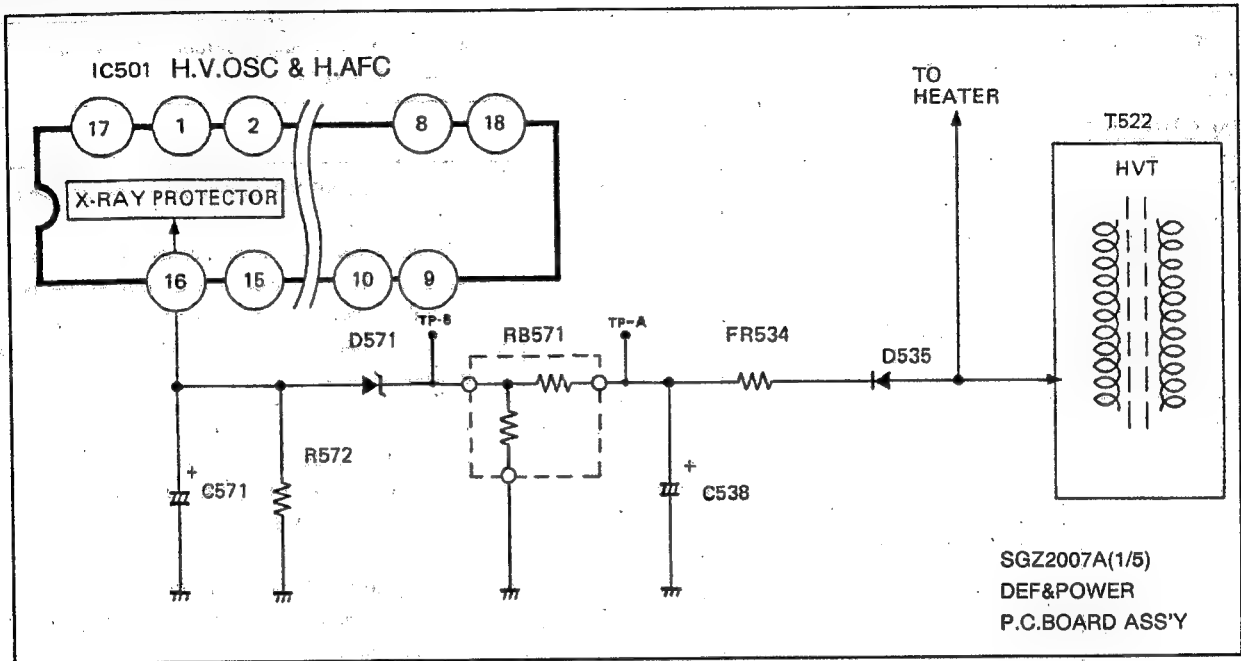


Fig. 1

## 2. CHECKING METHOD OF THE HIGH VOLTAGE HOLD DOWN CIRCUIT.

- (1) Make sure that the power SW is at OFF.
- (2) Replace R914 resistor 100Ω by 6.8kΩ.
- (3) Turn the power SW ON.
- (4) Make sure that the screen picture disappears.
- (5) Turn the power SW OFF.
- (6) Reset the R914 resistor (i. e. from 6.8kΩ to 100Ω).

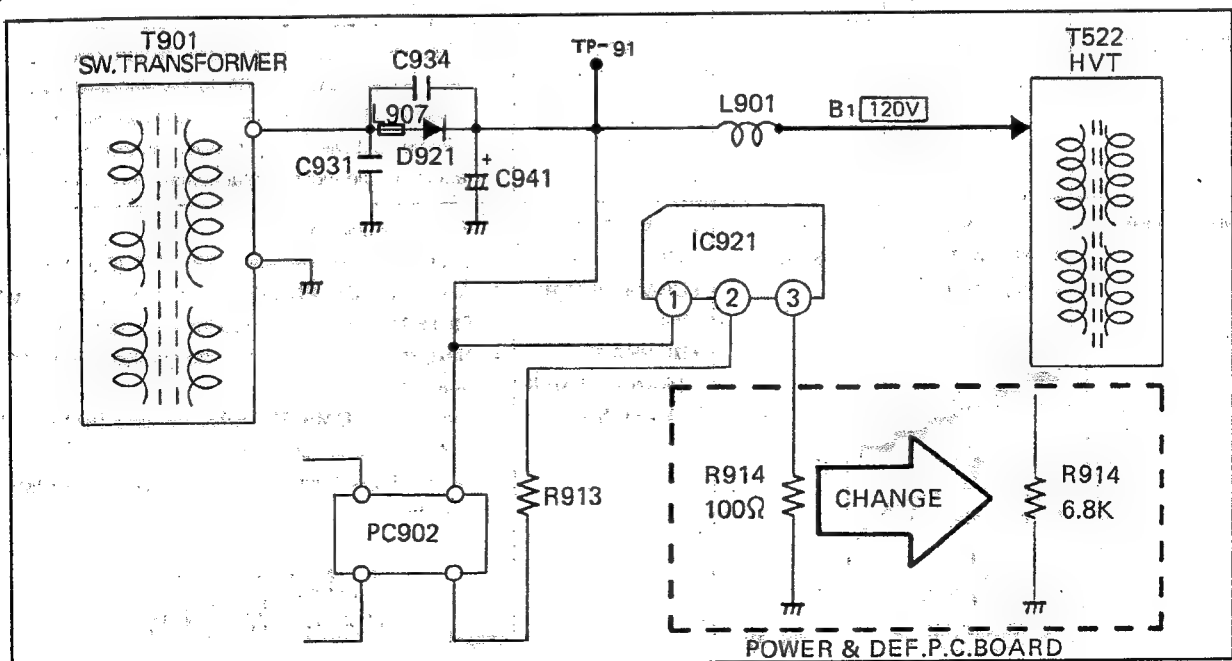


Fig. 2

## ADJUSTMENT

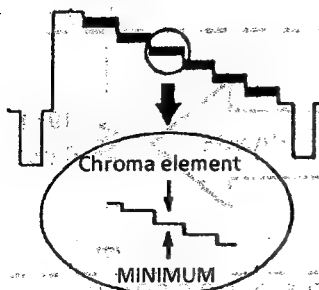
Item	Measuring instrument	Test point	Adjustment part	Description
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### POWER CIRCUIT

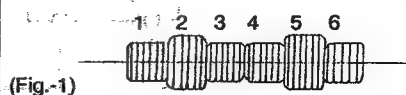
B1 POWER SUPPLY	DC VOLTMETER	TP - 91 TP - E ( $\frac{1}{\mu}$ )		1. Confirm that the voltage between TP - 91 and TP - E ( $\frac{1}{\mu}$ ) is DC 120V.
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### MAIN CIRCUIT

NOISE (RF AGC)			•NOISE VR	<ol style="list-style-type: none"> <li>1. Adjust the <b>NOISE VR</b> so that the noise appears in the picture.</li> <li>2. Next the <b>NOISE VR</b> in a direction that the noise disappears from the picture and stop at the point where the noise has disappeared from the picture.</li> <li>3. Turn to another channel and confirm that there are no abnormalities.</li> </ol>
BRIGHT & BLACK LEVEL			•BLACK LEVEL VR •SERVICE SWITCH	<ol style="list-style-type: none"> <li>1. Press the remote control reset button twice to set the brightness to the standard level.</li> <li>2. Rotate the <b>BLACK LEVEL VR</b> fully clockwise.</li> <li>3. Tuning the <b>SERVICE SWITCH</b> from the N side to the S side.</li> <li>4. Select the <b>BRIGHT</b> control with the remote controller function keys. Use the +/- keys to adjust the brightness.</li> <li>5. Cause black to become clearest by rotating the <b>BLACK LEVEL VR</b> counterclockwise.</li> <li>6. Confirm the status on all the channels.</li> <li>7. Tuning the <b>SERVICE SWITCH</b> from the S side to the N side.</li> </ol>
PICTURE				<ol style="list-style-type: none"> <li>1. Press the remote control reset button twice to set the picture to the standard level.</li> <li>2. Select the <b>PICTURE VR</b> control with the remote controller function keys. Use the +/- key to adjust the picture.</li> </ol>
TINT & COLOR			•TINT VR •COLOR VR	<ol style="list-style-type: none"> <li>1. Press the remote control reset button twice to set the <b>TINT</b> and <b>COLOR VR</b> to the standard level.</li> <li>2. Select the <b>TINT</b> and <b>COLOR</b> controls with the remote controller function keys. Use the +/- keys to adjust for the most natural human skin color.</li> </ol>
COMB FILTER	PATTERN GENERATOR OSILLOSCOPE	TP - 64A TP - 64B	•COMB FILTER1. VR •COMB FILTER2. VR •DL PHASE TRANSFORMER •PHASE VR	<ol style="list-style-type: none"> <li>1. Receive a color bar signal.</li> <li>2. Connect an oscilloscope to TP - 64A.(Fig.-1)</li> <li>3. Adjust the <b>DL PHASE</b> transformer and <b>COMB FILTER1. VR</b> and minimize the chroma elements.</li> <li>4. Next, change connection of the oscilloscope to TP - 64B.(Fig.-2)</li> <li>5. Adjust the <b>COMB FILTER2. VR</b> and <b>PHASE VR</b> and minimize the chroma elements.</li> <li>6. Repeat steps 3 and 5 to fully minimize the 3.58MHz elements.</li> </ol>



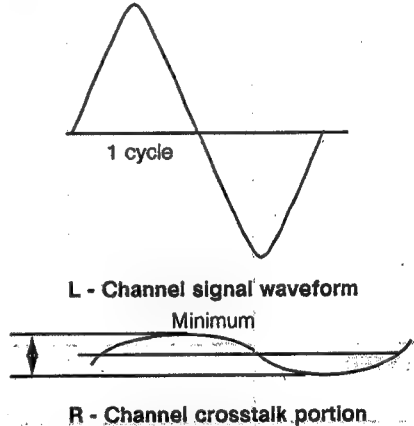
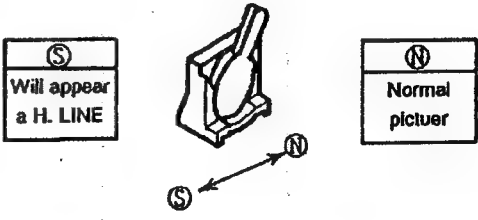
(Fig.-2)



(Fig.-1)

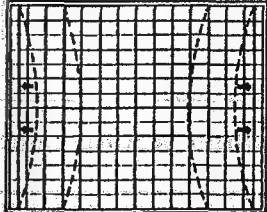
Item	Measuring instrument	Test point	Adjustment part	Description
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### MAIN CIRCUIT

<b>COLOR SYNC.</b>	<b>PATTERN GENERATOR</b> <b>OSCILLOSCOPE</b>		<b>TRIMMER CAPACITOR</b>	<ol style="list-style-type: none"> <li>1. Receive the color bar signal.</li> <li>2. Escape the electricity applied on the pin ⑫ of IC201 to the ground by using 0.1μF MY, and supply +12VDC to the pin ③ through 10kΩ.</li> <li>3. Adjust the <b>COLOR SYNC. TRIMMER CAP</b> to obtain color synchronization.</li> <li>4. Remove the connections and check that the color synchronization does not deteriorate on any of the channels.</li> </ol>
<b>SEPARATION</b>	<b>TV MULTI CHANNEL SOUND GENERATOR</b> <b>OSCILLOSCOPE</b>	<b>AUDIO OUTPUT, L, R</b>	<b>SEPARATION VR</b>	<ol style="list-style-type: none"> <li>1. Set the TV multichannel sound signal generator for generating stereo signal and output signal of about 3KHz from the left channel.</li> <li>2. Connect an oscilloscope to the "L" output and obtain a clear view of 1 - cycle portion of 3KHz waveforms.</li> <li>3. Change connection of the oscilloscope to the "R" output and expand the voltage axis.</li> <li>4. Adjust the <b>SEPARATION VR</b> and minimize the 3KHz crosstalk portion.</li> </ol> <div style="text-align: center;">  <p>L - Channel signal waveform</p> <p>Minimum</p> <p>R - Channel crosstalk portion</p> </div>
<b>HORIZONTAL LINE</b>			<b>SERVICE SWITCH</b>	<ol style="list-style-type: none"> <li>1. Turning the <b>SERVICE SWITCH</b> from the N side to the S side will bring the horizontal line display to the screen.</li> </ol> <div style="text-align: center;">  <p>Will appear a H. LINE</p> <p>Normal picture</p> </div>

### MULTICHANNEL SOUND CIRCUIT

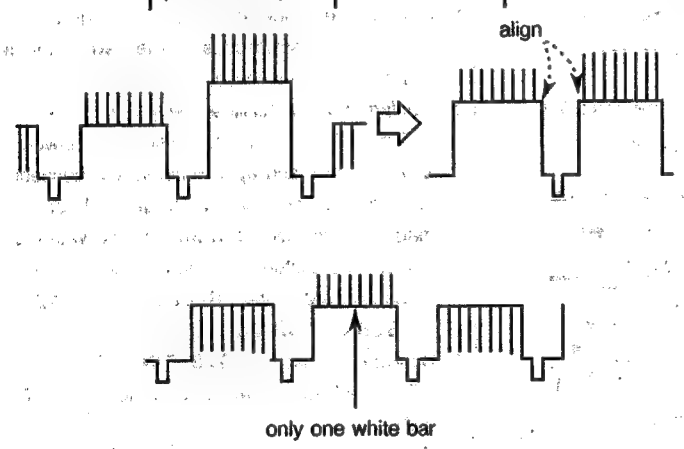
Do not touch the VRs inside the MULTICHANNEL SOUND CIRCUIT Board.

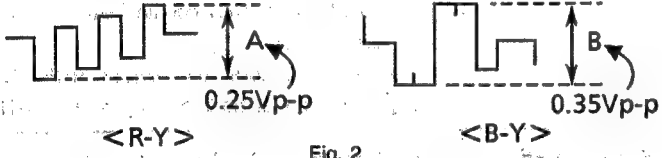
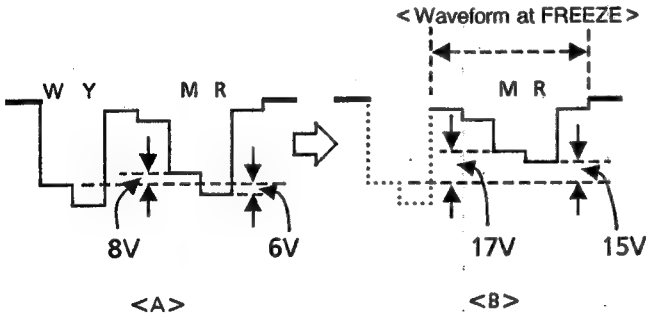
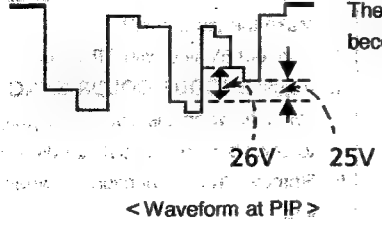
Item	Measuring Instrument	Test point	Adjustment part	Description
<b>DEF. &amp; POWER CIRCUIT</b>				
<b>FOCUS</b>			<ul style="list-style-type: none"> <li>• FOCUS 1VR.</li> <li>• FOCUS 2VR.</li> </ul>	<ol style="list-style-type: none"> <li>1. Adjust the <b>FOCUS VR</b>(Focus1, Focus2) to obtain clear pictures.</li> <li>2. Check that pictures have been adjusted to optimum appearance in both central and peripheral areas of the screen.</li> </ol>
<b>H. FREQ.</b>			<b>H. HOLD VR</b> (H.FREQ.VR)	<ol style="list-style-type: none"> <li>1. Set the <b>H. HOLD VR</b> to the mechanical center position.</li> <li>2. Connect the jumper clip between ⑩ pin of IC2501 and earth.</li> <li>3. Adjust the <b>H. HOLD VR</b> until picture is in view and locks or drift slowly back and forth.</li> <li>4. Remove the jumper clip.</li> <li>5. Make sure that the set maintains horizontal sync, when channels are switched.</li> </ol>
<b>V. CENTER</b> <b>V. HEIGHT</b> <b>V. LIN.</b>	<b>PATTERN GENERATOR</b>		<b>V. CENTER SW.</b> <b>V. HEIGHT VR</b> <b>V. LIN. VR</b>	<ol style="list-style-type: none"> <li>1. Receive an picture that enables confirmation on vertical symmetry.</li> <li>2. Operate the <b>V. CENTER SW</b> to shift the screen display in left - hand/right - hand directions.</li> <li>3. Rotate the <b>V. HEIGHT VR</b> to cause the upper/lower picture edges to fit into the screen.</li> <li>4. Adjust the <b>V. LINEARITY VR</b> and obtain vertical symmetry of picture.</li> <li>5. Readjust the <b>V. HEIGHT VR</b> and obtain correct upper/lower picture sizes.</li> </ol> <p>* A circle or crosshach is an ideal picture to facilitate confirmation on vertical symmetry.</p> <p>* By changing switch setting, move the picture for several millimeters in the upward/downward directions.</p>
<b>H CENTER</b>			<b>H CENTER VR</b>	<ol style="list-style-type: none"> <li>1. Observe the picture and adjust the <b>H CENTER VR</b> control for equal horizontal position left and right.</li> </ol>
<b>H. WIDTH &amp; SIDE PIN CORRECTION</b>	<b>PATTERN GENERATOR</b>		<b>H. WIDTH VR</b> <b>SIDE PIN CORRECTION VR</b>	<ol style="list-style-type: none"> <li>1. Set the <b>H.WIDTH VR</b> to mechanical center.</li> <li>2. Display the picture to the crosshatch pattern.</li> <li>3. Adjust the <b>SIDE PIN CORRECTION VR</b> so that the V. line of the crosshatch pattern becomes a straight line.</li> <li>4. Then adjust the <b>H. WIDTH VR</b> and correct the picture - missing condition to the normal status.</li> </ol> <p>* This adjustment is conducted when characters or others to be displayed at screen corners are not appearing on the screen.</p> 



Item	Measuring instrument	Test point	Adjustment part	Description
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## PIP CIRCUIT

<b>READ/WRITE clock adjustment</b>	<b>Pattern generator</b>  <b>Oscilloscope (H-rate 10:1)</b>  <b>Frequency counter</b>	<b>PC connector</b> <b>③pin</b>  <b>PY connector</b> <b>③pin</b>	<b>RCK Trimmer capacitor (C746)</b>  <b>WCK Trimmer capacitor (C762)</b>	<ol style="list-style-type: none"> <li>1. Input the cross hatch signal to two of the following to receive the image: TV, VIDEO1 or VIDEO2.</li> <li>2. Connect 1CH of the oscilloscope with ③pin of the PC connector, and 2CH with ③pin of the PY connector.</li> <li>3. Change the picture to FREEZE and adjust RCK Trimmer capacitor to synchronize the two waveforms.</li> <li>4. Adjust WCK Trimmer capacitor so that the position of the right edge of the FREEZE picture and the normal picture match by obtaining both pictures alternately.</li> <li>5. Check that the left edge of the picture expands a little (= appx 3%) when performing FREEZE.</li> </ol> <p>(Separate method)</p> <ol style="list-style-type: none"> <li>1. Connect the frequency counter with the cathode of the CRT socket.</li> <li>2. Freeze the picture and adjust RCK Trimmer capacitor so that the frequency is 15.734kHz.</li> </ol>
<b>Vertical filter adjustment</b>	<b>pattern generator</b>  <b>Oscilloscope (V-rate 10:1)</b>	<b>TP-YSB</b>	<b>V. FILTER VR (R241)</b>	<ol style="list-style-type: none"> <li>1. Receive the image of the cross hatch signal.</li> <li>2. Connect the oscilloscope with TP-YSB.</li> <li>3. Make the picture PIP and adjust V. FILTER VR so that the heights of the white of the two waveforms are the same as shown in fig. 1.</li> <li>4. Change the picture to SPRIT and check that the same waveform is obtained during PIP.</li> <li>5. Check that the waveform has only one white bar when the picture is changed to FREEZE.</li> </ol>
 <p>align</p> <p>only one white bar</p> <p>Fig. 1</p>				
<b>Encoder Color synchronous adjustment</b>	<b>Pattern generator</b>	<b>TP-FRC</b>	<b>ENCODE COLOR SYNC Trimmer capacitor (C308)</b>	<ol style="list-style-type: none"> <li>1. Receive the image of the color bar signal.</li> <li>2. Make the picture PIP.</li> <li>3. Connect 5V line with TP-FRC.</li> <li>4. Adjust ENCODE COLOR SYNC Trimmer capacitor until when the color changes from strip pattern to color bar and almost stands still.</li> <li>5. Remove the connection between TP-FRC and 5V line.</li> <li>6. Check that when the channel is changed and returned to color bar, it immediately catches without color synchronization being destroyed.</li> </ol>

Item	Measuring instrument	Test point	Adjustment part	Description
Decoder color synchronous adjustment	Pattern generator Frequency counter MYLAR CAPACITOR (0.1 $\mu$ F)	TP-FRCC (IC201 ⑥pin) TP-SC	DECODE COLOR SYNC Trimmer capacitor (C113)	<ol style="list-style-type: none"> <li>1. Receive the image of the color bar signal.</li> <li>2. Make the picture PIP.</li> <li>3. Connect MY. CAP. of 0.1<math>\mu</math>F between TP-FRCC and GND.</li> <li>4. Connect the frequency counter with TP-SC.</li> <li>5. Adjust DECODE COLOR SYNC Trimmer capacitor so that the frequency is 3.579545MHz <math>\pm</math> 100Hz.</li> <li>6. Remove MY. CAP.</li> </ol>
PIP Color demodulation rough adjustment	Pattern generator Oscilloscope (H-rate 10:1)	TP-BY TP-RY	SUB TINT VR (R112) SUB COLOR VR (R103) R-Y LEVEL VR (R332)	<ul style="list-style-type: none"> <li>• Perform this after recorder color synchronous adjustment.</li> </ul> <ol style="list-style-type: none"> <li>1. Make the picture FREEZE.</li> <li>2. Connect the oscilloscope with TP-BY and TP-RY, respectively.</li> <li>3. Adjust SUB TINT VR so that a waveform like that in fig. 2 is obtained.</li> <li>4. Adjust SUB COLOR VR so that A of fig. 2 is 0.25 Vp-p.</li> <li>5. Adjust R-Y LEVEL VR so that B of fig. 2 is 0.35Vp-p.</li> </ol>
 <p style="text-align: center;">Fig. 2</p>				
PIP Color demodulation adjustment	Pattern generator Oscilloscope (H-rate 10:1)	Red cathode (RK) [CRT SOCKET PCB ASS'Y]	SUB COLOR VR (R103) SUB TINT VR (R112) PIP TINT VR (R358)	<ul style="list-style-type: none"> <li>• Perform this after encoder color synchronization, decoder color synchronization and PIP color demodulation rough adjustments.</li> </ul> <ol style="list-style-type: none"> <li>1. Receive the image of the color bar signal.</li> <li>2. Connect the oscilloscope to the red cathode(RK) stage of the CRT socket.</li> <li>3. Confirm that the oscilloscope waveform is as shown in Fig. 3-A, with approximately 8V between white and magenta, and approximately 6V between white and red. (If deviation is large, adjust white to magenta with TINT, and white to red with COLOR.)</li> <li>4. Switch the picture between white in the normal mode and red in the FREEZE mode is 15V, adjust the SUB COLOR VR. (Fig. 3-B)</li> <li>5. Similarly, adjust the SUB TINT VR so that the difference between white and magenta is 17V. (Fig. 3-B)</li> <li>6. Set for PIP, adjust the SUB COLOR VR to set the difference between white and red to 25V, and the PIP TINT VR for 26V between white and magenta.</li> <li>7. SET to FREEZE and if the step 2 adjustment has deviated (= 15V), repeat the adjustment.</li> <li>※ Since the adjustment varies according to the signal generator, observe the picture and fine adjust to align hue and saturation.</li> <li>8. Set for normal picture and receive a broadcast signal.</li> <li>9. Observe skin color or red and adjust the SUB TINT VR to match the FREEZE mode.</li> <li>10. Similarly, so that hue and saturation match in the PIP mode, adjust the SUB COLOR VR and PIP TINT VR.</li> </ol>
 <p style="text-align: center;">Fig. 3</p>				
 <p style="text-align: center;">Fig. 4</p>				

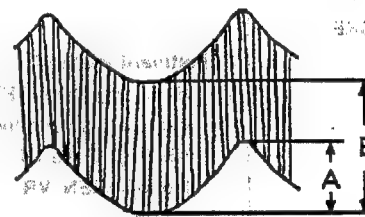
Item	Measuring instrument	Test point	Adjustment part	Description
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**AUDIO CIRCUIT**

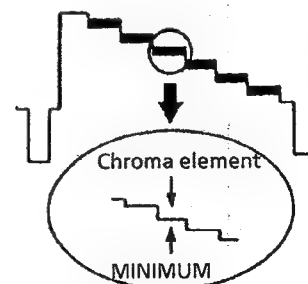
<b>DOLBY LEVEL</b>	<ul style="list-style-type: none"> <li>• SIGNAL (AUDIO) GENERATER</li> <li>• MIL: VOLT METER</li> <li>• OSILOSCOPE</li> </ul>	TP-DOL	<b>DOLBY LEVEL VR</b>	<ol style="list-style-type: none"> <li>1. In the same manner as per 1. above, input the 400Hz and 410m Vrms.</li> <li>2. Adjust the DOLBY LABEL VR (R315) so that the waveform at the TP - DOL become 500m Vrms.</li> </ol>
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**DBF CIRCUIT**

<b>DBF MODULATION</b>	<b>OSILOSCOPE</b>	TP - F TP - E	<b>V. MODULATION VR</b>  <b>H. MODULATION VR</b>	<ol style="list-style-type: none"> <li>1. Receive a black - and - white signal.</li> <li>2. Connect an oscilloscope to the TP - F and TP - E (<math>\nabla</math>).</li> <li>3. Adjust the V. MODULATION VR so that the value or A becomes 350V (+20V, -0V).</li> <li>4. Adjust the H. MODULATION VR so that the value B becomes 800V (<math>\pm 20V</math>).</li> </ol>
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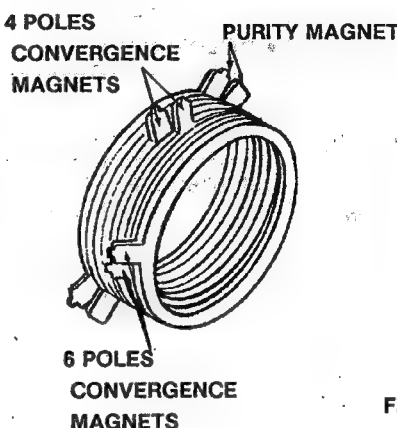
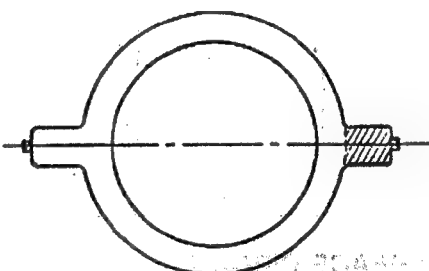
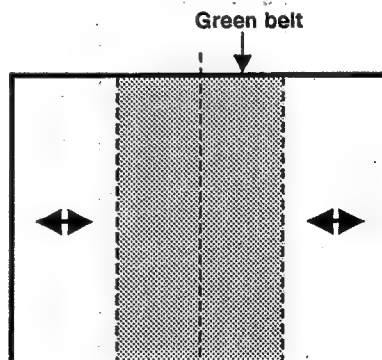
**PIP INTERFACE CIRCUIT**

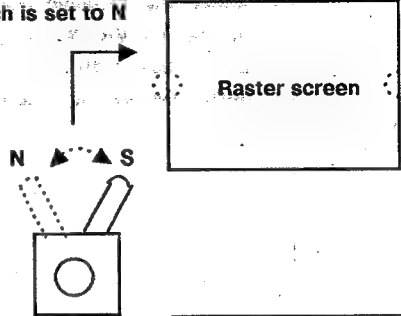
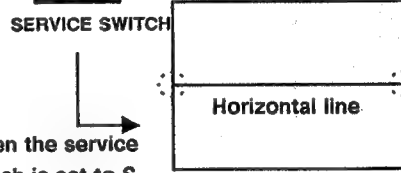
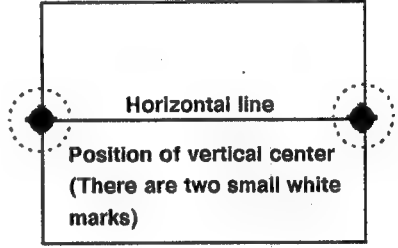
<b>PIP INTERFACE COMB FILTER</b>	<b>PATTERN GENERATOR OSILOSCOPE</b>	TP - 42	<b>COMB GAIN VR</b> <b>COMB PHASE TRANSFORMER</b>	<ol style="list-style-type: none"> <li>1. Receive a color bar signal.</li> <li>2. Connect an oscilloscope to TP - 42.</li> <li>3. Adjust the COMB PHASE transformer and COMB GAIN VR and minimize the chroma elements.</li> <li>4. Repeat steps 3 to fully minimize the 3.58MHz elements.</li> </ol>
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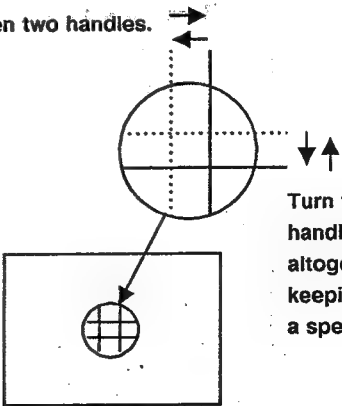
PURITY, CONVERGENCE AND WHITE BALANCE

1. ADJUSTMENT OF PURITY

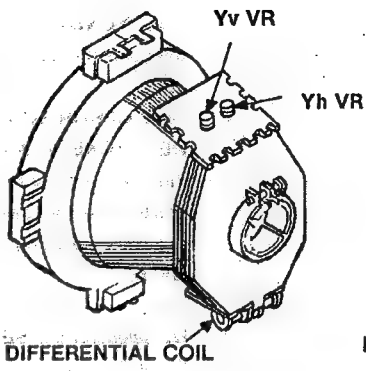
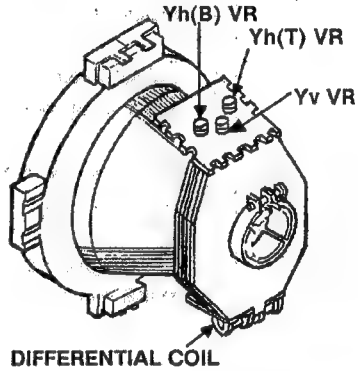
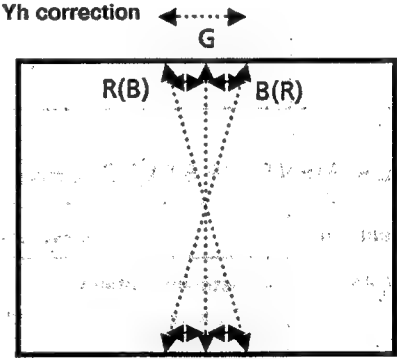
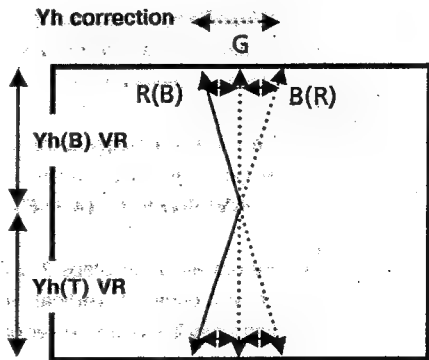
Adjustment Part	Description	Remarks
SERVICE SWITCH	Prior to starting adjustment, perform the following items:	 <p>4 POLES CONVERGENCE MAGNETS</p> <p>PURITY MAGNET</p> <p>6 POLES CONVERGENCE MAGNETS</p> <p>Fig. 1</p>
WEDGE	1. Remove a wedge inserted into the DEF. yoke. At this time, clean the portion from which the wedge has been removed.	
PURITY MAGNET	2. Peel adhesive used to fix six magnets with a tip of screw driver so that the magnets can be turned freely.	
GREEN CUT-OFF VR	3. Let the monochrome screen appear.	
RED CUT-OFF VR	4. Demagnetize the CRT with a demagnetizer.	
BLUE CUT-OFF VR	5. Set the brightness and picture to slightly higher than the standard values, and warm up for about 20 ~ 30 minutes.	
SCREEN VR		
DEF. YOKE		
	Adjustment method	
	1. By turning the GREEN CUT - OFF VR fully to the right side and the RED · BLUE CUT - OFF VR fully to the left side, adjust the screen with the SCREEN VR to make the green picture visible.	
	2. After loosening the set screw of the DEF. YOKE, draw the yoke fully to the rear side to let irregular color of a vertical belt form appear on the screen.	 <p>Align two purity magnets horizontally.</p> <p>Fig. 2</p>
	3. Mutually pile up two PURITY MAGNETS, and set them to a horizontal position as initial magnets (Fig. 2).	
	4. While opening and closing or turning the claws of PURITY MAGNETS, let green vertical belts appear on the center of the screen (Fig. 3).	 <p>Green belt</p> <p>Shift the green belt to the center</p> <p>Fig. 3</p>

Adjustment Part	Description	Remarks
	<p>5. Push out the DEF. YOKE to the front side, and set the position of the DEF. YOKE so that the entire screen becomes totally green (Fix the DEF. YOKE temporarily with a WEDGE so that the yoke is not moved).</p> <p>6. Next, let HORIZONTAL LINE appear. With the DEF. YOKE, make the line horizontal and let the line be further closer to the vertical center position (In this case, do not change the front and rear positions of the DEF. yoke) (Figs. 4 and 5).</p> <p>7. By selecting the SERVICE SWITCH to N from S, let the initial picture appear on the screen.</p> <p>8. Make sure that the purity has been obtained regarding the red, blue and mono - color raster.</p> <p>9. Lightly tighten the set screws so that the DEF. YOKE is not moved back and forth.</p> <p>10. Insert the removed WEDGE into the initial position and fix it.</p> <p>11. Firmly tighten the set screws of the DEF. YOKE with an appropriate torque.</p>	<p>When the service switch is set to N</p>  <p>Raster screen</p> <p>When the service switch is set to S</p>  <p>Horizontal line</p> <p>Fig. 4</p>  <p>Horizontal line</p> <p>Position of vertical center (There are two small white marks)</p> <p>Let the horizontal line approach between the white marks at the portion denoted by .</p> <p>Fig. 5</p>

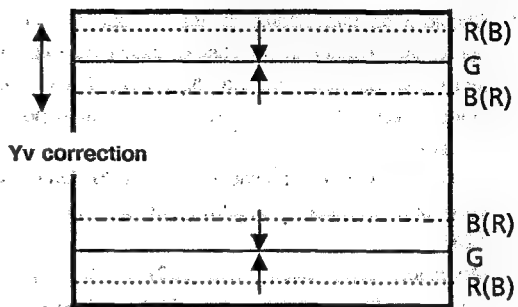
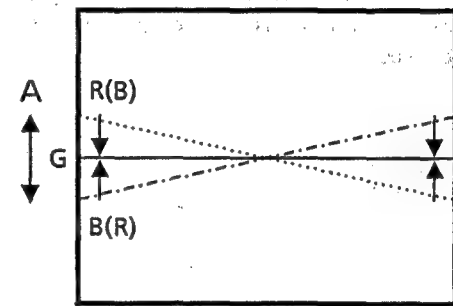
## 2. ADJUSTMENT OF STATIC (CENTER) CONVERGENCE

Adjustment Part	Description	Remarks
CONVERGENCE MAGNET	<p><b>Adjustment method</b></p> <p>1. Try to receive cross-hatch pattern.</p> <p>2. With the 4 - POLE CONVERGENCE MAGNETS, overlap the red and blue lines at the center of the screen and turn the color to Magenta (red/blue).</p> <p>3. Next, overlap Magenta (red/blue) and green lines at the center of the screen using the 6 - POLE CONVERGENCE MAGNETS.</p> <p>4. By repeating the Steps 2 and 3 above, align the convergence of vertical line to that of the horizontal line at the center of the screen.</p>	<p>Open two handles.</p>  <p>Turn the handles altogether while keeping them at a specific angle.</p> <p>Fig. 6</p>

3. ADJUSTMENT OF DYNAMIC CONVERGENCE

Adjustment Part	Description	Remarks
Yh VR Yv VR DIFFERENTIAL COIL	<ul style="list-style-type: none"><li>Adjust the dynamic convergence by means of the Yh VR, Yv VR and DIFFERENTIAL COIL. This adjustment should not be performed by oscillation of the DEF. yoke.</li></ul>	<div><p>Fig. 7</p></div> <div><p>Fig. 8</p></div> <div><p><b>Adjustment method</b></p><p>* There are two types of Yh VR control adjustment.</p><p><b>Type 1</b></p><ol style="list-style-type: none"><li>Align the displacement of the red and blue vertical lines by adjustment with the Yh VR (Figs. 7 and 9).</li></ol><p><b>Type 2</b></p><ol style="list-style-type: none"><li>Align the displacement of the red and blue vertical lines by adjustment with the Yh(B) VR and Yh(T) VR (Figs. 8 and 10).</li></ol></div> <div><p>Fig. 9</p></div> <div><p>Fig. 10</p></div>



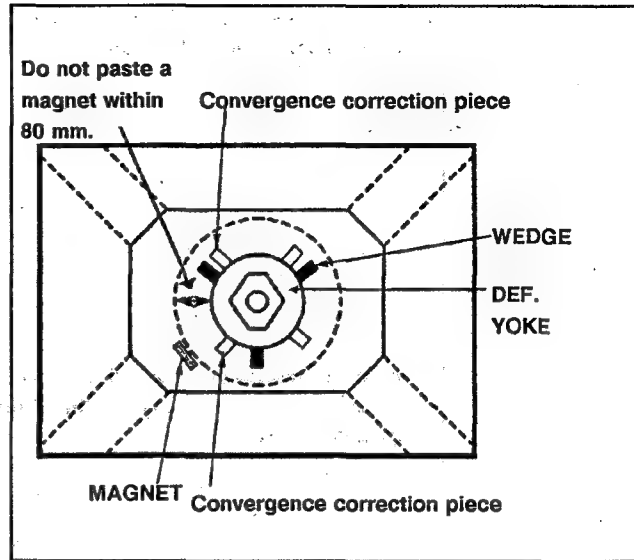
Adjustment Part	Description	Remarks
	<p>2. Align the displacement of red and blue in Fig.9 by adjustment with the <b>Yv VR</b> (Figs. 7, 8 and 11).</p> <p>3. Align the displacement of red and blue in the section A by adjustment with the <b>DIFFERENTIAL COIL</b>(Figs. 7, 8 and 12).</p>	 <p>Fig. 11</p>  <p>Fig. 12</p>
	<ul style="list-style-type: none"> <li>After completing adjustment of the purity and convergence, fix the six magnets using adhesive.</li> </ul>	

#### 4. ADJUSTMENT OF WHITE BALANCE

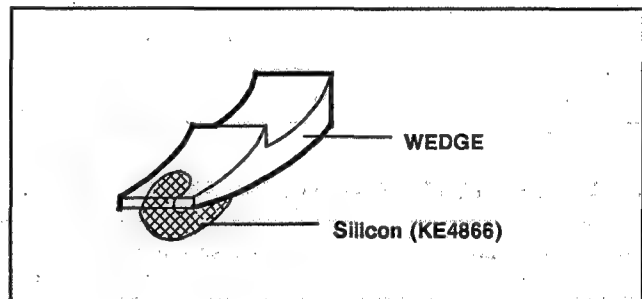
Adjustment Part	Description	Remarks
<b>SERVICE SWITCH</b>  <b>CUT - OFF VR</b>  <b>DRIVE VR</b>	<ol style="list-style-type: none"> <li>Let monochrome screen appear.</li> <li>Let HORIZONTAL LINE appear on the screen.</li> <li>Turn the <b>RED, GREEN AND BLUE CUT - OFF VRs</b> fully to the left side.</li> <li>Position the <b>RED AND GREEN DRIVE VRs</b> roughly to the center.</li> <li>Turn the <b>SCREEN VR</b> to let either of the red, green and blue horizontal lines appear slightly on the screen.</li> <li>Turn the <b>CUT - OFF VR</b> of the color appeared first about 10° to the right side. Adjust the <b>SCREEN VR</b> again to let this color slightly appear.</li> <li>With the <b>CUT - OFF VRs</b> for the other two colors, adjust the intensity of the two colors to the same intensity of the horizontal line appeared in the step 6 so that the horizontal line will slightly light where the three colors are at a same level.</li> <li>Change over the <b>SERVICE SWITCH</b> to restore the screen to an initial one.</li> <li>After making the screen a little bit dark, perform fine adjustment of the <b>CUT OFF VRs</b> (R, G and B) to obtain the best monochrome screen. After turning the screen to bright next, adjust the screen with the <b>RED OR GREEN DRIVE VR</b> to obtain the best monochrome screen.</li> </ol>	

## PURITY · CONVERGENCE Precautions for Adjustment

1. Should it be unavoidable to use a magnet to correct the purity, the magnet to be pasted should be separated by more than 80 mm from the DEF. yoke (If the magnet is made closer to the DEF. yoke, distortion will appear on the screen).
2. Three V - form wedges should be used for fixing the DEF. yoke and arranged respectively at an interval of about 120°.  
Moreover, apply silicon (KE4866) on the tips of the wedges. In this case, be sure not to apply it beside the tips.
3. In principle, any convergence correction piece should not be used. If unavoidable to do so, use it in a diagonal direction. Moreover, four or more correction pieces should not be used.



Back of CRT



# PARTS LIST

## CAUTION

- The parts marked  $\Delta$  are very important for the safety. When replacing these parts, be sure to use specified ones to secure the safety and performance.
- The module circuit board is supplied together with the assembly, but the parts which do not have the drawing in this Parts List, P. C. Board Ass'y and the Parts No. columns of which are filled with lines — will not be supplied.
- As a rule, the resistors and capacitors which are indicated as shown in (NOTE 2) "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" are not shown in the list of the parts on the board.  
When ordering the service parts, confirm the resistance/rated power, capacitance/rated voltage, and type of the parts, then order by the part No. indicated according to (NOTE 2).

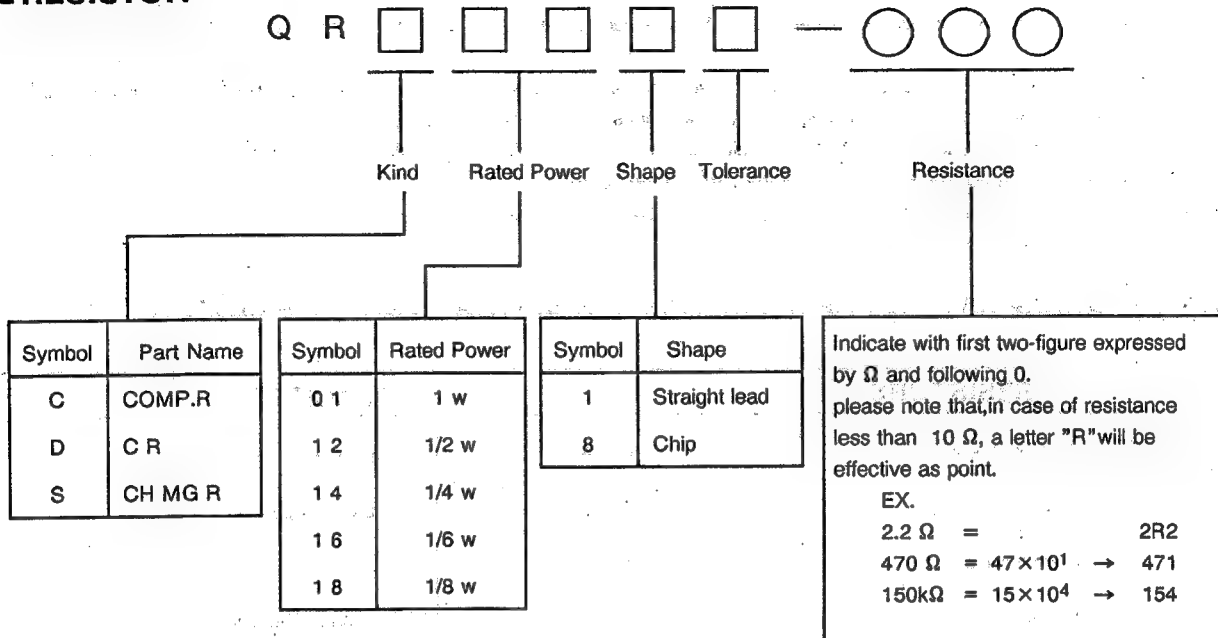
### ( NOTE 1 ) ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

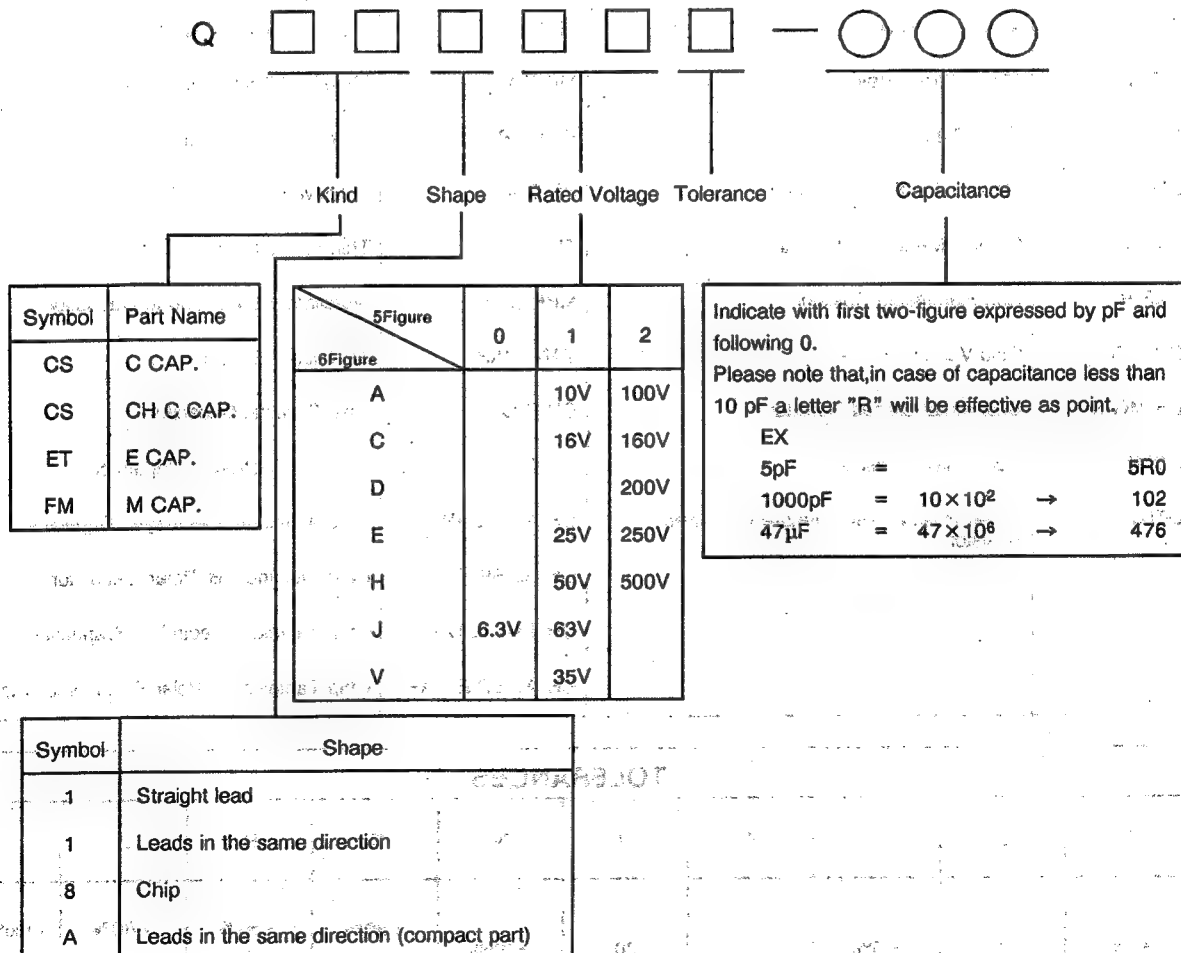
TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
$\pm 1\%$	$\pm 2\%$	$\pm 5\%$	$\pm 10\%$	$\pm 20\%$	$\pm 30\%$	+30% - 10%	+50% - 10%	+80% - 20%	+100% - 0%

( NOTE 2 ) HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS

■ RESISTOR



■ CAPACITOR



## MAIN PARTS LIST

SYMBOL NO.	△	PART NO.	PART NAME	REMARKS
CRT & TUNER				
	△	M89KCW31X-KD	PICTURE TUBE	V01
	△	CE20195-00A-KD	DEF YOKE ASSY	DY01
		CE40764-00A	WEDGE ASSY	x4
	△	CE41709-002J1	DEG COIL	*
		CE41650-00A	P. C. MAGNET	
	△	AN3181EL-B01	TUNER	TU1701 *
VARIABLE R				
R1164F		QVPE610-203H	TRIM R (NOISE)	20kΩ B
R1218F		QVPE610-502H	TRIM R (BLACK LEVEL)	5kΩ B
R1246		QVPA601-222A	V R (COMB. FILTER1)	2.2kΩ B
R1255		QVPA601-471A	V R (COMB. FILTER2)	470 Ω B
R1259		QVPA601-222A	V R (PHASE)	2.2kΩ B
R1601F		QVPE610-103H	TRIM R (SEPARATION)	10kΩ B
R2414		QVAA003-CB14A	V R (V HOLD)	10kΩ B
R2431		QVPE610-201H	TRIM R (V LIN.)	200 Ω B
R2432		QVPE610-201H	TRIM R (V HEIGHT)	200 Ω B
R2510		QVPE611-502HZ	V R (H HOLD)	5kΩ B
R2516		QVPE610-502H	TRIM R (H. CENTER)	5kΩ B
R2559		QVPE610-203H	TRIM R (SIDE PIN CORRECT)	20kΩ B
R2561	△	QVPE610-103H	TRIM R (H WIDTH)	10kΩ B
R2601		QVAA004-CB54A	V R (INPUT BALANCE)	50kΩ B
R2963		QVPCA03-201H	V R (PURITY FINE ADJ)	200 Ω B
R3313		QVPA803-502M	V R (R CUT OFF)	5kΩ B
R3314		QVPA803-502M	V R (G CUT OFF)	5kΩ B
R3315		QVPA803-502M	V R (B CUT OFF)	5kΩ B
R3319		QVPA803-201M	V R (R DRIVE)	200 Ω B
R3320		QVPA803-201M	V R (G DRIVE)	200 Ω B
R6315		QVPE610-103H	TRIM R (DOLBY LEVEL)	10kΩ B
R8103		QVPE604-503H	V R (SUB COLOR)	50kΩ B
R8112		QVPE604-503H	V R (SUB TINT)	50kΩ B
R8214		QVPA601-471A	V R (COMB FILTER)	470 Ω B
R8241		QVPE604-102H	V R (V. FILTER)	1kΩ B
R8332		QVPA601-222A	V R (R-Y LEVEL)	2.2kΩ B
R8358		QVPA601-222A	V R (PIP TINT)	2.2kΩ B
R8706		QVPE604-203H	V R (RVFD)	20kΩ B
R9504		QVPA803-503M	V R (H. MODULATION)	50kΩ B
R9513		QVPA803-503M	V R (V. MODULATION)	50kΩ B
TRANSFORMER				
T2901	△	CE41922-A01	SW TRANSF	
T2902	△	CE41741-002	POWER TRANSF.	
		CE30174-002	POWER TRANSF	T01
	△	CJ27253-00E-KD	HV TRANSF	T2522



SYMBOL NO.	△	PART NO.	PART NAME	REMARKS
DIODE				
D1001		MA4330 (M) -T2	ZENER DIODE	
D1162		MA4200 (M) -T2	ZENER DIODE	
D1338		MA4051 (M) -T2	ZENER DIODE	
D1601		MA4091 (H) -T2	ZENER DIODE	
D1701		MA4056 (M) -T2	ZENER DIODE	
D1706		RD6. 8ES (B3) -T2	ZENER DIODE	
D1707		RD6. 8ES (B3) -T2	ZENER DIODE	
D1708		RD6. 8ES (B3) -T2	ZENER DIODE	
D1855		MA4150 (M) -T2	ZENER DIODE	
D2401		MA4120 (M) -T2	ZENER DIODE	
D2426	△	05AZ75-T5	ZENER DIODE	
D2502		RD11E (B3) -T2	ZENER DIODE	
D2503		RD20E (B1) -T2	ZENER DIODE	
D2504		MA4110 (M) -T2	ZENER DIODE	
D2505		MA4120 (M) -T2	ZENER DIODE	
D2521	△	CTU-G3DR	DUMP DIODE	
D2571	△	MA4068 (N) C1-T2	ZENER DIODE	
D4774		GL-5HD23	L. E. D.	POWER/ON TIMER IND.
D6301		RD5. 1E (B1) -T2	ZENER DIODE	
D6621	△	RD33E (B1) -T2	ZENER DIODE	
D6622	△	RD33E (B1) -T2	ZENER DIODE	
D6721	△	RD33E (B1) -T2	ZENER DIODE	
D6722	△	RD33E (B1) -T2	ZENER DIODE	
D7101		MA4110 (M) -T2	ZENER DIODE	
D7108		MA4043 (M) -T2	ZENER DIODE	
D8701		MA3056 (H) -W	ZENER DIODE	
D8721		MA3056 (H) -W	ZENER DIODE	
D8722		MA3056 (H) -W	ZENER DIODE	
D8723		MA3056 (H) -W	ZENER DIODE	
TRANSISTOR				
Q2522	△	2SD2148-C1	SI. TRANSISTOR	H. OUT
IC				
IC1001		TA78L005AP	I. C. (M)	
IC1201		AN5322NK	I. C.	
IC1271		M51494L	I. C. (M)	
IC1331		AN5352N	I. C.	
IC1621		M5218L	I. C.	
IC1701		MN1872013JXK7	I. C.	
IC1702		MN1280-K	I. C. (M)	
IC1771		MN12C261D	I. C.	
IC1772		MN12C261D	I. C.	
IC1801		TC4066BP	I. C. (M)	

SYMBOL NO.	△	PART NO.	PART NAME	REMARKS
IC1851		M51321P	I. C.	
IC1901		TA78L006AP	I. C. (M)	
IC2421	△	UPC1498H	I. C.	
IC2501		HA11423	I. C. (M)	
IC2521	△	UPC2412HF	I. C.	
IC2901	△	STRS6301-LF953	I. C.	
IC2921	△	SE120N	I. C.	
IC2961		TA78012AP	I. C. (M)	
IC6601		CXA1124AS	I. C.	
IC4841		GP1U501W	IFR DETECT UNIT	
IC6151	△	NE4558N	I. C.	
IC6152		NE4558N	I. C.	
IC6201		M5201L	I. C.	
IC6301		M50198P	I. C. (M)	
IC6351		LA2730	I. C. (M)	
IC6451		NE4558N	I. C.	
IC6481		NE4558N	I. C.	
IC6501		TC4052BP	I. C.	
IC6601		TDA1526	I. C.	
IC6602	△	TA8200AH	I. C.	
IC6701		TDA1526	I. C.	
IC6702	△	TA8200AH	I. C.	
IC6703		UPC1406HA	I. C.	
IC6801		UPC1406HA	I. C.	
IC6802	△	TA8213K	I. C.	
IC8101		M51271FP-W	I. C.	
IC8141		MC74HC4053F-W	I. C. (M)	
IC8201		M51285BFP	I. C.	
IC8202		CXL5504M-W	I. C.	
IC8203		TC4066BF-W	I. C.	
IC8301		MC74HC4053F-W	I. C. (M)	
IC8501		M52684AFP-W	I. C. (M)	
IC8701		M37450M8-334FP	I. C.	
IC8702		MN1380-S	I. C.	
IC8721		M65105BFP	I. C.	
IC8741		MC74HC4053F-W	I. C. (M)	
IC8742		SN74S124N	I. C. (DIGI-OTHER)	
IC8743		MC4044	I. C.	
IC8761		SN74S124N	I. C. (DIGI-OTHER)	
IC8801		M51321P	I. C.	
IC8801		SN74HC04NS-W	I. C.	
IC8802		TC4066BP	I. C. (M)	
IC8802		M52678FP-W	I. C. (M)	
IC8803		M52678FP-W	I. C. (M)	
IC8841		M5M4C500L	I. C.	
IC8842		M5M4C500L	I. C.	
IC8843		M5M4C500L	I. C.	
IC8844		SN74HC157NS-W	I. C.	
IC8845		SN74HC157NS-W	I. C.	
IC8861		M52683FP	I. C.	
IC8902		AN7812F	I. C.	
IC8903		M5236L	I. C.	

SYMBOL NO.	△	PART NO.	PART NAME	REMARKS
OTHERS				
CF1701		CM34790-00A*-H	AV TERMINAL ASSY	
DL1201		CST4 00MGW	CER. RESONATOR	
DL1241		CE40986-A01	DELAY LINE	
DL1242		CE41577-001	DELAY LINE	
		CE41353-002	DELAY LINE	
FR2534	△	QRH127J-4R7M	F R	4.7 Ω 1/2W J
FR2539	△	QRH027J-100M	F R	10 Ω 2W J
PC2902	△	TLP621	I. C. (M)	
RY2901	△	CESK002-001	RELAY	
SI201		QSL4A13-C02	LEVER SWITCH	SERVICE SW
S1710		QSL4A13-C02	LEVER SWITCH	VSM SERVICE SW
S2401		QSL4A13-C02	LEVER SWITCH	V CENTER SW
S2901		QSS4C22-C02	SLIDE SWITCH	PURITY CORRECT
S2902		QSS4C23-C01	SLIDE SWITCH	PURITY CORRECT
X1301		CE41651-001	X-TAL	
		SX-6106A (H1)	MTS PC BOARD ASS	
		CM11710-A02-MA	FRONT PANEL	*
		CM33823-00A-KD	PUSH KNOB	
		CM45696-001	KNOB	
	△	QMP14C0-220J1	POWER CORD	*
		CM11712-001-MA	REAR COVER	*
CF6301		CSA3. 27MG	CER. RESONATOR	
DL8201		CE40907-A01	DELAY LINE (1H)	
FR7101	△	QRH127J-221M	F R	220 Ω 1/2W J
FR9539	△	QRH127J-101M	F R	100 Ω 1/2W J
F9901	△	QMF66U1-4R0S	FUSE	4.0A
LF9901	△	CE40248-00B	LINE FILTER	
LF9902	△	CE41734-00A	LINE FILTER	
LF9903	△	CE40847-00A	LINE FILTER	
SG9501		CE41680-302	ARESTOR	
S4702		QSP4H11-C04Z	PUSH SWITCH	FUNCTION
S4703		QSP4H11-C04Z	PUSH SWITCH	LEVEL/CH-
S4704		QSP4H11-C04Z	PUSH SWITCH	LEVEL/CH+
S4705		QSP4H11-C04Z	PUSH SWITCH	POWER
S4706		QSP4H11-C04Z	PUSH SWITCH	VOL+
S4707		QSP4H11-C04Z	PUSH SWITCH	VOL-
S9903	△	QSP4C11-C02	PUSH SWITCH	DEGAUSS
TH9901	△	CE40595-001	P. THERMISTOR	
TH9902	△	A75414	P. THERMISTOR	
X8101		CE40405-001	CRYSTAL (4FSC)	
X8301		CSB500F9	CER. RESONATOR	
X8302		CE40405-001	CRYSTAL (4FSC)	
X8501		CSB500F9	CER. RESONATOR	
X8701		CSA10. 0MT040	C RESONATOR	

# EXPLODED VIEW PARTS LIST

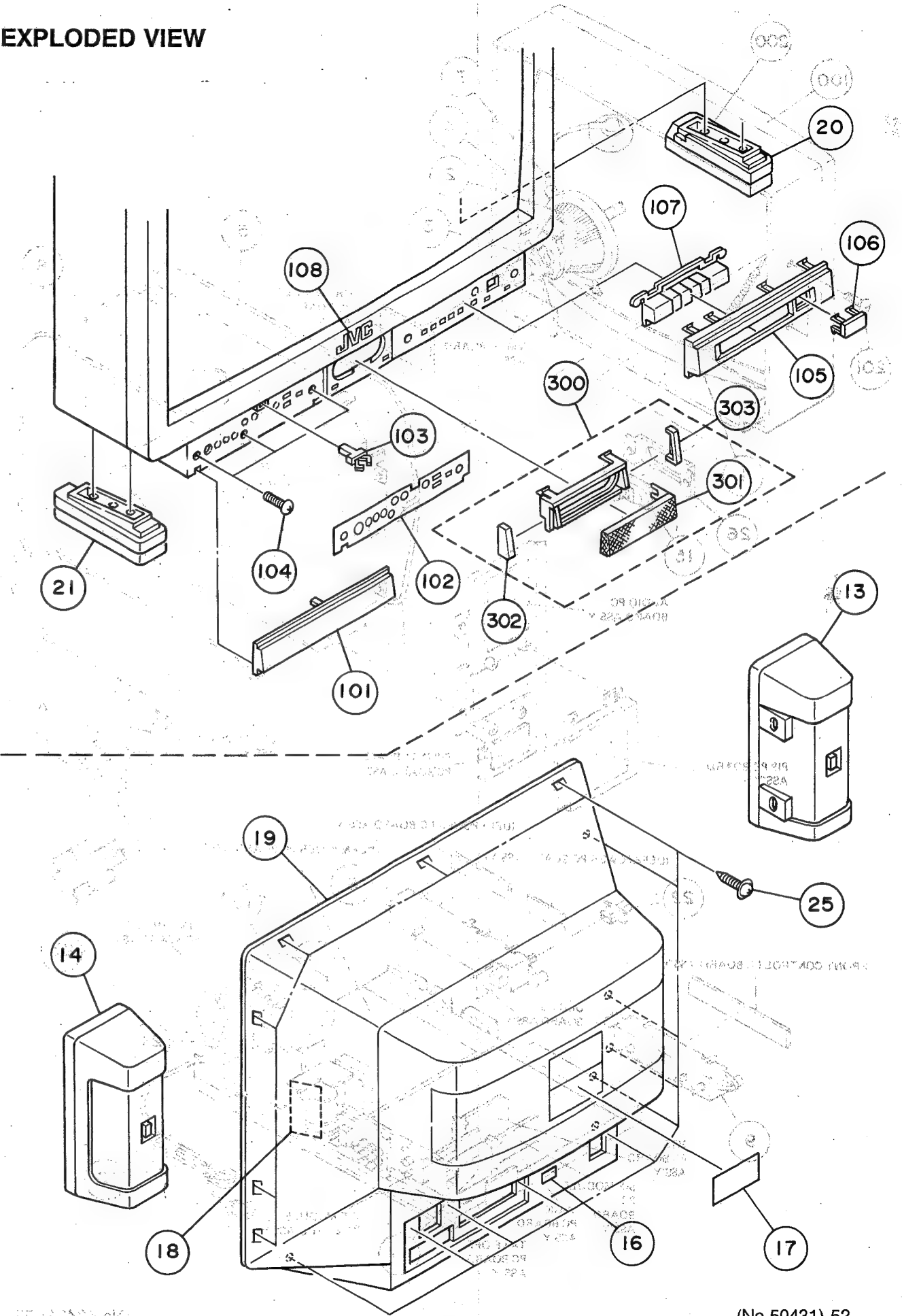
SYMBOL NO.	PART NO.	PART NAME	REMARKS
1	M89KCW31X-KD	PICTURE TUBE	V01
2	CE20195-00A-KD	DEF YOKE ASSY	DY01
3	CE41650-00A	P. C. MAGNET	
4	CH30375-00A	BRAIDED ASSY	
5	CE41709-002J1	DEG COIL	*
6	CE41575-002J1	S/N CANCEL COIL	*
7	CE40764-00A	WEDGE ASSY	×4
8	CM22064-A01-V0	CONTROL BASE (A)	
9	CM22065-A01-V0	CONTROL BASE (B)	
10	QMP14C0-220J1	POWER CORD	*
11	AN3181EL-B01	TUNER	TU1701
12	CJ27253-00E-KD	HV TRANSF	T2522
13	CE20166-00A	SPEAKER BOX (L)	SP01
14	CE20166-00B	SPEAKER BOX (R)	SP02
15	EAS-12D123D	SPEAKER	SP03
16	CM46067-001 (R)	DOLBY LABEL (R)	
17	CM44889-001-A	RATING LABEL	*
18	CM32436-A14	WARNING LABEL	
19	CM11712-001-MA	REAR COVER	*
20	CM21755-00C-KD	FOOT ASSY (R)	*
21	CM21755-00D-KD	FOOT ASSY (L)	
22	CM45696-001	KNOB	
23	CE30174-002	POWER TRANSF	T01
24	CM33811-A01-V0	CORD PLATE	
25	GBSB4016N	TAPPING SCREW	×15
26	CM22063-B01-V0	SPEAKER BOARD	
100	CM11710-A02-MA	FRONT PANEL	*
101	CM22062-B02-V0	DOOR	
102	CM34679-A02-V0	OPERATION SHEET	
103	CM45436-00A	DOOR LATCH	
104	SBSB4016M	TAPPING SCREW	×3
105	CM11791-A02-V0	CONTROL PANEL	
106	CM33754-001-V0	REMOCON WINDOW	
107	CM33823-00A-KD	PUSH KNOB	
108	CM46084-A01	BRAND MARK	
200	CM11787-00A-MA	BODY ASSY	*
201	CM45921-B01	ORNAMENT BOLT	
300	CM34667-B0A-V0	CENTER SP GRILLE	
301	CM34676-A01	PUNCHING METAL	
302	CM46746-B01	ORNAMENT PLATE	
303	CM46746-B02	ORNAMENT PLATE	

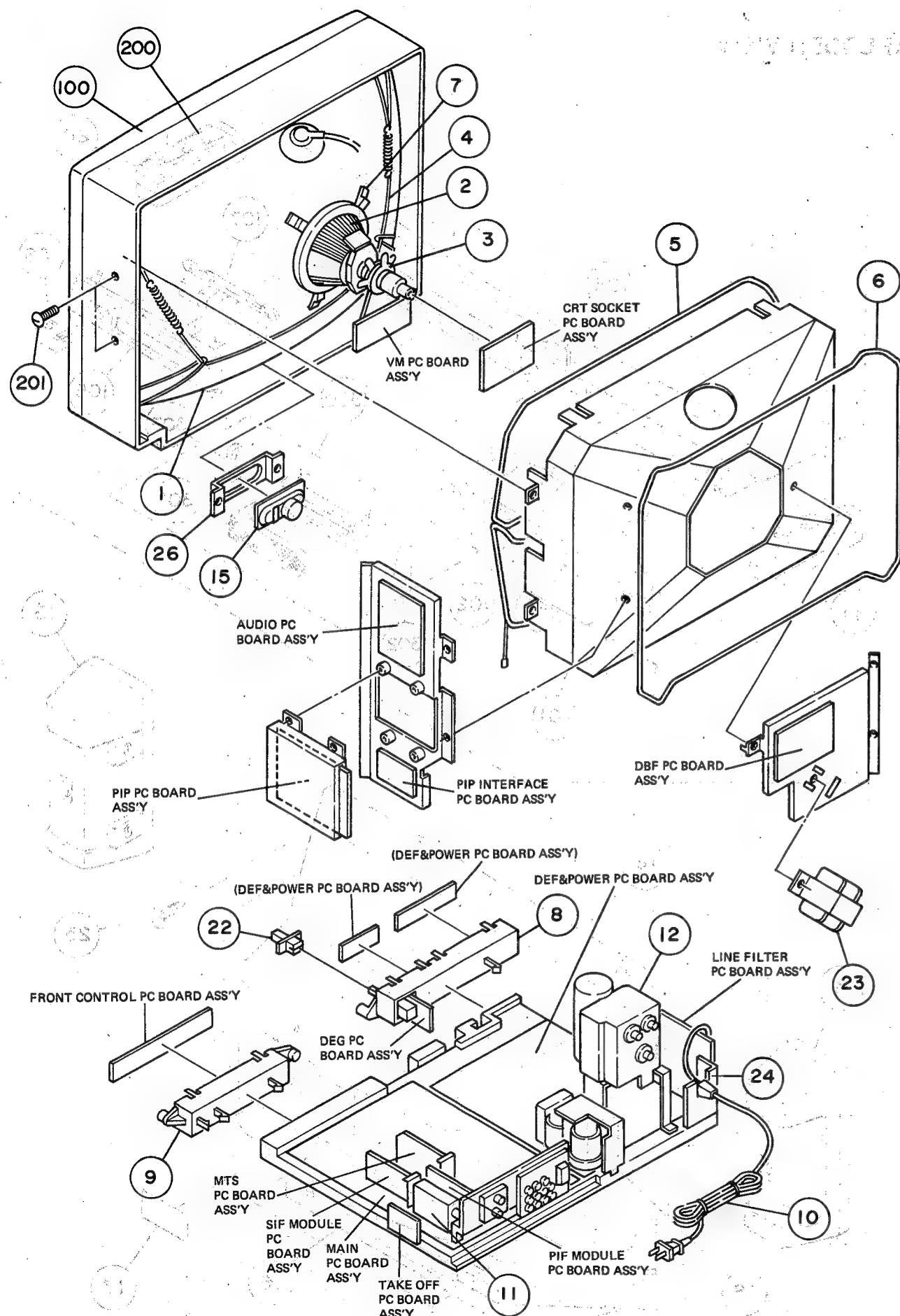
## REPLACEMENT PICTURE TUBE

\* This model uses two type picture tubes.  
When replacing a picture tube, be sure to observe the following combinations.

Type	Picture tube	Def. yoke
A	M89KCW31X - KD	CE20195 - 00A - KD
B	M89KCW11X - KD	CE20164 - 00A - KD

## EXPLODED VIEW





## PRINTED CIRCUIT BOARD PARTS LIST

## MAIN PC BOARD Ass'y(SGZ1007A(H1))

SYMBOL NO.	PART NO.	PART NAME	REMARKS
VARIABLE R			
R1164F	QVPE610-203H	TRIM R (NOISE)	20kΩ B
R1218F	QVPE610-502H	TRIM R (BLACK LEV EL)	5kΩ B
R1246	QVPA601-222A	V R (COMB. FILTER1)	2.2kΩ B
R1255	QVPA601-471A	V R (COMB. FILTER2)	470 Ω B
R1259	QVPA601-222A	V R (PHASE)	2.2kΩ B
R1601F	QVPE610-103H	TRIM R (SEPARATIO N)	10kΩ B
RESISTOR			
R1001	QRD149J-5R6S	C R	5.6 Ω 1/4W J
R1161	QRD123J-221SX	C R	220 Ω 1/2W J
R1166	QRD149J-4R7S	C R	4.7 Ω 1/4W J
R1294	QRD149J-150S	C R	15 Ω 1/4W J
R1818	QRD149J-470S	C R	47 Ω 1/4W J
R1907	QRD123J-683SX	C R	68kΩ 1/2W J
CAPACITOR			
C1001	QEM51CM-477M	E CAP.	470μF 16V M
C1212	QFV71HJ-104MZ	TF CAP.	0.1μF 50V J
C1251	QFV71HJ-224MZ	TF CAP.	0.22μF 50V J
C1253	QFV81HJ-224M	TF CAP.	0.22μF 50V J
C1274	QFZ0083-104MZ	M CAP.	0.1μF 50V K
C1302	QEC01HM-224MZ	E CAP.	0.22μF 50V M
C1312	QAT3110-300A	TRIM CAP.	30pF 100V
C1603	QEN61CM-106Z	BP E CAP.	10μF 16V M
C1604	QEN61CM-106Z	BP E CAP.	10μF 16V M
C1621	QEN61HM-475Z	BP E CAP.	4.7μF 50V M
C1623	QEN61HM-475Z	BP E CAP.	4.7μF 50V M
C1862	QFV71HJ-473MZ	TF CAP.	0.047μF 50V J
TRANSFORMER			
T1241	CE41301-001	B. P. F.	
T1242	CE40411-001	DL. PHASE TRANSF	
COIL			
L1182	A76186-27Z	PEAKING COIL	27μH
L1201	A76186-10Z	PEAKING COIL	10μH
L1241	A76186-22Z	PEAKING COIL	22μH
L1242	A76186-5.6Z	PEAKING COIL	5.6μH
L1271	A76186-120Z	PEAKING COIL	12μH
L1272	A76186-82Z	PEAKING COIL	82μH
L1301	A76186-330Z	PEAKING COIL	30μH
L1302	A76186-120Z	PEAKING COIL	12μH
L1303	CELP002-562Z	PEAKING COIL	
L1304	A76186-47Z	PEAKING COIL	47μH
L1305	A76186-47Z	PEAKING COIL	47μH
L1306	A76186-47Z	PEAKING COIL	47μH
L1307	A76186-18Z	PEAKING COIL	18μH
L1701	CE40041-220Z	PEAKING COIL	
L1771	A76186-1.0Z	PEAKING COIL	1.0μH
DIODE			
D1001	MA4330 (M) -T2	ZENER DIODE	
D1002	MA165-T2	SI. DIODE	
D1162	MA4200 (M) -T2	ZENER DIODE	
D1201	MA165-T2	SI. DIODE	
D1239	MA165-T2	SI. DIODE	
D1240	MA165-T2	SI. DIODE	
D1241	MA165-T2	SI. DIODE	
D1242	MA165-T2	SI. DIODE	
D1243	MA165-T2	SI. DIODE	
D1245	MA165-T2	SI. DIODE	
D1271	MA165-T2	SI. DIODE	

SYMBOL NO.	PART NO.	PART NAME	REMARKS
DIODE			
D1291	W06A	SI. DIODE	
D1292	1S2473H-T5	SI. DIODE	
D1301	MA165-T2	SI. DIODE	
D1302	MA165-T2	SI. DIODE	
D1331	MA165-T2	SI. DIODE	
D1332	MA165-T2	SI. DIODE	
D1333	MA165-T2	SI. DIODE	
D1334	MA165-T2	SI. DIODE	
D1335	MA165-T2	SI. DIODE	
D1336	MA165-T2	SI. DIODE	
D1337	MA165-T2	SI. DIODE	
D1338	MA4051 (M) -T2	ZENER DIODE	
D1461	MA165-T2	SI. DIODE	
D1462	MA165-T2	SI. DIODE	
D1463	MA165-T2	SI. DIODE	
D1464	MA165-T2	SI. DIODE	
D1601	MA4091 (H) -T2	ZENER DIODE	
D1641	MA165-T2	SI. DIODE	
D1642	MA165-T2	SI. DIODE	
D1643	MA165-T2	SI. DIODE	
D1644	MA165-T2	SI. DIODE	
D1661	MA165-T2	SI. DIODE	
D1664	MA165-T2	SI. DIODE	
D1691	MA165-T2	SI. DIODE	
D1692	MA165-T2	SI. DIODE	
D1693	MA165-T2	SI. DIODE	
D1701	MA4056 (M) -T2	ZENER DIODE	
D1704	MA165-T2	SI. DIODE	
D1705	MA165-T2	SI. DIODE	
D1706	RD6. 8ES (B3) -T2	ZENER DIODE	
D1707	RD6. 8ES (B3) -T2	ZENER DIODE	
D1708	RD6. 8ES (B3) -T2	ZENER DIODE	
D1712	MA165-T2	SI. DIODE	
D1713	MA165-T2	SI. DIODE	
D1714	MA165-T2	SI. DIODE	
D1715	MA165-T2	SI. DIODE	
D1716	MA165-T2	SI. DIODE	
D1721	MA165-T2	SI. DIODE	
D1722	MA165-T2	SI. DIODE	
D1723	MA165-T2	SI. DIODE	
D1724	MA165-T2	SI. DIODE	
D1725	MA165-T2	SI. DIODE	
D1728	MA165-T2	SI. DIODE	
D1729	MA165-T2	SI. DIODE	
D1730	MA165-T2	SI. DIODE	
D1731	MA165-T2	SI. DIODE	
D1732	MA165-T2	SI. DIODE	
D1733	MA165-T2	SI. DIODE	
D1734	MA165-T2	SI. DIODE	
D1771	MA165-T2	SI. DIODE	
D1772	MA165-T2	SI. DIODE	
D1773	MA165-T2	SI. DIODE	
D1775	MA165-T2	SI. DIODE	
D1801	MA165-T2	SI. DIODE	
D1802	MA165-T2	SI. DIODE	
D1821	MA165-T2	SI. DIODE	
D1822	MA165-T2	SI. DIODE	
D1831	MA165-T2	SI. DIODE	

SYMBOL NO.	PART NO.	PART NAME	REMARKS
DIODE			
D1832	MA165-T2	SI. DIODE	
D1851	MA165-T2	SI. DIODE	
D1852	MA165-T2	SI. DIODE	
D1853	MA165-T2	SI. DIODE	
D1854	MA165-T2	SI. DIODE	
D1855	MA4150 (M) -T2	ZENER DIODE	
D1902	MA165-T2	SI. DIODE	
D1903	MA165-T2	SI. DIODE	
TRANSISTOR			
Q1001	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1003	2SA1175 (JH) -T	SI. TRANSISTOR	
Q1201	2SA1175 (JH) -T	SI. TRANSISTOR	
Q1202	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1203	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1204	2SA1175 (JH) -T	SI. TRANSISTOR	
Q1241	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1242	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1243	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1244	2SA1175 (JH) -T	SI. TRANSISTOR	
Q1245	2SA1175 (JH) -T	SI. TRANSISTOR	
Q1246	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1247	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1248	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1249	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1271	2SA1175 (JH) -T	SI. TRANSISTOR	
Q1272	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1273	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1274	2SC1906-T	SI. TRANSISTOR	
Q1291	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1292	2SA673 (C) -T	SI. TRANSISTOR	
Q1301	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1302	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1304	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1308	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1451	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1452	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1461	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1462	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1463	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1464	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1601	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1661	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1662	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1664	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1665	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1691	2SA1175 (JH) -T	SI. TRANSISTOR	
Q1692	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1702	2SB774 (RS) -T	SI. TRANSISTOR	
Q1703	2SB774 (RS) -T	SI. TRANSISTOR	
Q1704	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1705	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1706	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1707	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1709	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1710	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1772	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1775	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1776	2SC2785 (JH) -T	SI. TRANSISTOR	



SYMBOL NO.	PART NO.	PART NAME	REMARKS
TRANSISTOR			
Q1777	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1801	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1802	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1803	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1821	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1822	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1823	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1831	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1834	2SA1175 (JH) -T	SI. TRANSISTOR	
Q1851	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1852	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1853	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1856	2SC2785 (JH) -T	SI. TRANSISTOR	
Q1881	2SA1175 (JH) -T	SI. TRANSISTOR	
Q1882	2SC2878 (B) -T	SI. TRANSISTOR	
Q1883	2SC2878 (B) -T	SI. TRANSISTOR	
Q1884	2SC2878 (B) -T	SI. TRANSISTOR	
Q1885	2SC2878 (B) -T	SI. TRANSISTOR	
IC			
IC1001	TA78L005AP	I. C. (M)	
IC1201	AN5322NK	I. C.	
IC1271	M51494L	I. C. (M)	
IC1331	AN5352N	I. C.	
IC1621	M5218L	I. C.	
IC1701	MN1872013JXK7	I. C.	
IC1702	MN1280-K	I. C. (M)	
IC1771	MN12C261D	I. C.	
IC1772	MN12C261D	I. C.	
IC1801	TC4066BP	I. C. (M)	
IC1851	M51321P	I. C.	
IC1901	TA78L006AP	I. C. (M)	
OTHERS			
CF1701	CST4.00MGW	CER. RESONATOR	
DL1201	CE40986-A01	DELAY LINE	
DL1241	CE41577-001	DELAY LINE	
DL1242	CE41353-002	DELAY LINE	
J1801	CM34687-A0B-VH	AV TERMINAL	
J1821	QMD2B04-001	MINI CONNECTOR	S-VIDEO IN
S1201	QSL4A13-C02	LEVER SWITCH	SERVICE SW
S1710	QSL4A13-C02	LEVER SWITCH	VSM SERVICE SW
X1301	CE41651-001	X-TAL	

## DEF &amp; POWER PC BOARD Ass'y (SGZ2007A(H1))

SYMBOL NO.	PART NO.	PART NAME	REMARKS
VARIABLE R			
R2414	QVAA003-CB14A	V R (V HOLD)	10k $\Omega$ B
R2431	QVPE610-201H	TRIM R (V LIN.)	200 $\Omega$ B
R2432	QVPE610-201H	TRIM R (V HEIGHT)	200 $\Omega$ B
R2510	QVPE611-502HZ	V R (H HOLD)	5k $\Omega$ B
R2516	QVPE610-502H	TRIM R (H CENTER)	5k $\Omega$ B
R2559	QVPE610-203H	TRIM R (SIDE PIN C	ORRECT) 20k $\Omega$ B
R2561	QVPE610-103H	TRIM R (H WIDTH)	10k $\Omega$ B
R2601	QVAA004-CB54A	V R (INPUT BALANC	E) 50k $\Omega$ B
R2963	QVPCA03-201H	V R (PURITY FINE	ADJ) 200 $\Omega$ B
RESISTOR			
RB2571	CJ39622-00B	RESISTOR ARRAY	
R2405	QRV141F-2702AY	MF R	27k $\Omega$ 1/4W F
R2415	QRC121K-271Z	COMP. R	270 $\Omega$ 1/2W K
R2421	QRG019J-471	OM R	470 $\Omega$ 1W J
R2424	QRD123J-472SX	C R	4.7k $\Omega$ 1/2W J
R2430	QRX029J-1R5A	MF R	1.5 $\Omega$ 2W J
R2434	QRD123J-331SX	C R	330 $\Omega$ 1/2W J
R2435	QRD123J-182SX	C R	1.8k $\Omega$ 1/2W J
R2439	QRD123J-102SX	C R	1k $\Omega$ 1/2W J
R2512	QRG029J-472	OM R	4.7k $\Omega$ 2W J
R2513	QRG029J-392	OM R	3.9k $\Omega$ 2W J
R2521	QRG039J-472	OM R	4.7k $\Omega$ 3W J
R2522	QRD123J-562SX	C R	5.6k $\Omega$ 1/2W J
R2524	QRG029J-152	OM R	1.5k $\Omega$ 2W J
R2525	QRG029J-561A	OM R	560 $\Omega$ 2W J
R2526	QRG039J-472	OM R	4.7k $\Omega$ 3W J
R2531	QRX039J-2R2	MF R	2.2 $\Omega$ 3W J
R2532	QRX029J-2R2	MF R	2.2 $\Omega$ 2W J
R2533	QRD149J-1R0S	C R	1.0 $\Omega$ 1/4W J
R2535	QRD161J-163Y	C R	16k $\Omega$ 1/6W J
R2536	QRD161J-163Y	C R	16k $\Omega$ 1/6W J
R2537	QRG019J-472S	OM R	4.7k $\Omega$ 1W J
R2538	QRX019J-3R9S	MF R	3.9 $\Omega$ 1W J
R2541	QRG029J-562A	OM R	5.6k $\Omega$ 2W J
R2542	QRG029J-223	OM R	22k $\Omega$ 2W J
R2545	QRC121K-472Z	COMP. R	4.7k $\Omega$ 1/2W K
R2551	QRX039J-5R6A	MF R	5.6 $\Omega$ 3W J
R2554	QRD161J-184Y	C R	180k $\Omega$ 1/6W J
R2556	QRD161J-103Y	C R	10k $\Omega$ 1/6W J
R2567	QRD161J-392Y	C R	3.9k $\Omega$ 1/6W J
R2901	QRF104K-1R0	UNF R	1.0 $\Omega$ 10W K
R2902	QRD121J-224SY	C R	220k $\Omega$ 1/2W J
R2903	QRG039J-333	OM R	33k $\Omega$ 3W J
R2904	QRD121J-564SY	C R	560k $\Omega$ 1/2W J
R2905	QRM055K-R22	MP R	0.22 $\Omega$ 5W K
R2906	QRG039J-220	OM R	22 $\Omega$ 3W J
R2907	QRG039J-180	OM R	18 $\Omega$ 3W J
R2908	QRX029J-8R2	MF R	8.2 $\Omega$ 2W J
R2909	QRD149J-561S	C R	560 $\Omega$ 1/4W J
R2910	QRD149J-471S	C R	470 $\Omega$ 1/4W J
R2911	QRZ0086-R05	MP R	0.05 $\Omega$ 5W K
R2913	QRG019J-223S	OM R	22k $\Omega$ 1W J
R2914	QRD149J-101S	C R	100 $\Omega$ 1/4W J
R2935	QRG039J-181A	OM R	180 $\Omega$ 3W J
R2961	QRG029J-121	OM R	120 $\Omega$ 2W J
R2962	QRG019J-331S	OM R	330 $\Omega$ 1W J
R2973	QRG029J-271	OM R	270 $\Omega$ 2W J
R2991	QRC121K-275EZ	COMP. R	2.7M $\Omega$ 1/2W K

SYMBOL NO.	PART NO.	PART NAME	REMARKS
CAPACITOR			
△ C2403	QFV71HJ-333MZ	TF CAP.	0.033 $\mu$ F 50V J
C2404	QEE61VK-105BZ	TAN. CAP.	1 $\mu$ F 35V K
C2407	QFV71HJ-104MZ	TF CAP.	0.1 $\mu$ F 50V J
C2410	QFZ0083-563MZ	M CAP.	0.056 $\mu$ F 50V K
△ C2422	QCS31HJ-331AZ	CH C CAP.	330pF 50V J
△ C2423	QETC1VM-107Z	E CAP.	100 $\mu$ F 35V M
△ C2424	QCS31HJ-330AZ	CH C CAP.	33pF 50V J
△ C2426	QFV71HJ-274MZ	TF CAP.	0.27 $\mu$ F 50V J
C2427	QFV71HJ-823MZ	TF CAP.	0.082 $\mu$ F 50V J
C2429	QEM61EK-225MZ	E CAP.	2.2 $\mu$ F 25V K
△ C2430	QETC1VM-227Z	E CAP.	220 $\mu$ F 35V M
△ C2432	QFM72AK-154M	M CAP.	0.15 $\mu$ F 100V K
C2501	QEN61HM-335Z	BP E CAP.	3.3 $\mu$ F 50V M
C2510	QFP31HJ-562SZ	PP CAP.	5600pF 50V J
C2512	QFV81HJ-105M	TF CAP.	1 $\mu$ F 50V J
△ C2523	QEH62EM-225MZ	E CAP.	2.2 $\mu$ F 250V M
△ C2525	QFZ0081-1001S	MPP CAP.	1000pF 1600V $\pm$ 3%
△ C2526	QFZ0081-8301S	MPP CAP.	8300pF 1600V $\pm$ 3%
△ C2527	QFM72DK-333M	M CAP.	0.033 $\mu$ F 200V K
△ C2528	QFZ0081-8301S	MPP CAP.	8300pF 1600V $\pm$ 3%
△ C2529	QFZ0089-754S	MPP CAP.	0.75 $\mu$ F 200V J
△ C2532	QETC1EM-477Z	E CAP.	470 $\mu$ F 25V M
△ C2535	QETB1VM-228	E CAP.	2200 $\mu$ F 35V M
△ C2537	QETB2EM-336	E CAP.	33 $\mu$ F 250V M
△ C2538	QETC1VM-107Z	E CAP.	100 $\mu$ F 35V M
△ C2539	QFK62AJ-104MZ	MM CAP.	0.1 $\mu$ F 100V J
C2540	QFV71HJ-104MZ	TF CAP.	0.1 $\mu$ F 50V J
C2541	QEN61HM-225Z	BP E CAP.	2.2 $\mu$ F 50V M
△ C2546	QEH72DM-477M	E CAP.	470 $\mu$ F 200V M
C2551	QEM61HK-106MZ	E CAP.	10 $\mu$ F 50V K
△ C2553	QFZ0083-683MZ	M CAP.	0.068 $\mu$ F 50V K
C2555	QFZ0083-683MZ	M CAP.	0.068 $\mu$ F 50V K
△ C2557	QETC1VM-476Z	E CAP.	47 $\mu$ F 35V M
△ C2910	QCZ9033-102A	C CAP.	1000pFAC400V K
△ C2911	QCZ9033-102A	C CAP.	1000pFAC400V K
△ C2912	QCZ9033-102A	C CAP.	1000pFAC400V K
△ C2913	QCZ9033-102A	C CAP.	1000pFAC400V K
△ C2914	QEZ0145-687R	E CAP.	680 $\mu$ F 200V M
△ C2915	QFP32GK-103M	PP CAP.	0.01 $\mu$ F 400V K
△ C2916	QFP32JK-222M	PP CAP.	2200pF 630V K
△ C2918	QEH72DM-477M	E CAP.	470 $\mu$ F 200V M
△ C2920	QFV81HJ-105M	TF CAP.	1 $\mu$ F 50V J
△ C2931	QCY32HK-561AZ	CH C CAP.	560pF 500V K
△ C2932	QCY31HK-331AZ	CH C CAP.	330pF 50V K
△ C2934	QCZ0128-332A	C CAP.	3300pF 500V K
△ C2935	QCY31HK-102AZ	CH C CAP.	1000pF 50V K
△ C2941	QEH72DM-477M	E CAP.	470 $\mu$ F 200V M
△ C2942	QETB1VM-338	E CAP.	3300 $\mu$ F 35V M
△ C2943	QETB1VM-338	E CAP.	3300 $\mu$ F 35V M
△ C2991	QCZ9029-103M	C CAP.	0.01 $\mu$ FAC400V K
△ C2992	QCZ9029-103M	C CAP.	0.01 $\mu$ FAC400V K
TRANSFORMER			
△ T2521	A46022-BM	H. DRIVE TRANSF.	
△ T2901	CE41922-A01	SW TRANSF	
△ T2902	CE41741-002	POWER TRANSF.	
COIL			
△ L2401	CE41055-820	CHOKE COIL	
L2501	A76186-22Z	PEAKING COIL	22 $\mu$ H

	SYMBOL NO.	PART NO.	PART NAME	REMARKS
	COIL			
Δ	L2521	CE40970-00A	LINEARITY COIL	
	L2522	CE40107-001	CORD SLEEVE	
	L2551	CELC009-001	WIDTH COIL	
Δ	L2901	CJ30030-100	HEATER CHOKE	
Δ	L2902	CJ30030-100	HEATER CHOKE	
	L2907	CE40107-001	CORD SLEEVE	
	L2922	CE40107-001	CORD SLEEVE	
	DIODE			
	D2201	MA165-T2	SI. DIODE	
	D2202	MA165-T2	SI. DIODE	
	D2401	MA4120 (M) -T2	ZENER DIODE	
Δ	D2421	1SR35-100A-T2	SI. DIODE	
	D2423	MA165-T2	SI. DIODE	
Δ	D2424	1SS81-T5	SI. DIODE	
	D2425	MA165-T2	SI. DIODE	
Δ	D2426	05AZ75-T5	ZENER DIODE	
	D2501	MA165-T2	SI. DIODE	
	D2502	RD11E (B3) -T2	ZENER DIODE	
	D2503	RD20E (B1) -T2	ZENER DIODE	
	D2504	MA4110 (M) -T2	ZENER DIODE	
	D2505	MA4120 (M) -T2	ZENER DIODE	
Δ	D2521	CTU-G3DR	DUMP DIODE	
	D2522	U19E-FK	SI. DIODE	
	D2523	U19E-FK	SI. DIODE	
Δ	D2531	RU3AM-LFB1	SI. DIODE	
Δ	D2532	RU3AM-LFB1	SI. DIODE	
	D2533	DFA1A4-T3	SI. DIODE	
Δ	D2534	RH1S-T3	SI. DIODE	
Δ	D2535	1SS81-T2	SI. DIODE	
	D2536	DFM1A4-T2	SI. DIODE	
	D2537	1SS82-T5	SI. DIODE	
Δ	D2571	MA4068 (N) C1-T2	ZENER DIODE	
Δ	D2901	S4VB40	DIODE	
Δ	D2902	RU2-LFA1	SI. DIODE	
	D2903	DFA1A4-T3	SI. DIODE	
	D2904	1SS81-T2	SI. DIODE	
Δ	D2921	RU4AM-LFK2	SI. DIODE	
Δ	D2922	RU4YX-LFK2	SI. DIODE	
	D2931	S1WB10	SI. DIODE	
	D2932	1SS146-T2	SI. DIODE	
	D2933	MA165-T2	SI. DIODE	
	D2934	MA165-T2	SI. DIODE	
	TRANSISTOR			
	Q2201	2SC1740 (QR) -T	SI. TRANSISTOR	
	Q2501	2SA933 (QR) -T	SI. TRANSISTOR	
	Q2521	2SC2482 (C1) -T	SI. TRANSISTOR	
Δ	Q2522	2SD2148-C1	SI. TRANSISTOR	H. OUT
	Q2551	2SC3311A (QR) -T	SI. TRANSISTOR	
	Q2552	2SA1309A (QR) -T	SI. TRANSISTOR	
	Q2553	2SD1266A (QP)	SI. TRANSISTOR	
	Q2901	2SC1815 (YG) -T	SI. TRANSISTOR	
	Q2971	2SC1959 (Y) -T	SI. TRANSISTOR	
	IC			
Δ	IC2421	UPC1498H	I. C.	
	IC2501	HA11423	I. C. (M)	
Δ	IC2521	UPC2412HF	I. C.	
Δ	IC2901	STRS6301-LF953	I. C.	
Δ	IC2921	SE120N	I. C.	

SYMBOL NO.	PART NO.	PART NAME	REMARKS
IC IC2961	TA78012AP	I. C. (M)	
OTHERS	CM34790-00A-H	AV TERMINAL ASSY	
△ FR2534	QRH127J-4R7M	F R	4.7 Ω 1/2W J
△ FR2539	QRH027J-100M	F R	10 Ω 2W J
△ J2835	QMD6A04-001	DIN SOCKET	
△ PC2902	TLP621	I. C. (M)	
△ RY2901	CESK002-001	RELAY	
S2401	QSL4A13-C02	LEVER SWITCH	V CENTER SW
S2901	QSS4C22-C02	SLIDE SWITCH	PURITY CORRECT
S2902	QSS4C23-C01	SLIDE SWITCH	PURITY CORRECT

## CRT SOCKET PC BOARD Ass'y (SGZ3005A(H1))

SYMBOL NO.	PART NO.	PART NAME	REMARKS
VARIABLE R			
R3313	QVPA803-502M	V R (R CUT OFF)	5kΩ B
R3314	QVPA803-502M	V R (G CUT OFF)	5kΩ B
R3315	QVPA803-502M	V R (B CUT OFF)	5kΩ B
R3319	QVPA803-201M	V R (R DRIVE)	200 Ω B
R3320	QVPA803-201M	V R (G DRIVE)	200 Ω B
RESISTOR			
△ R3304	QRG029J-153	OM R	15kΩ 2W J
△ R3305	QRG029J-153	OM R	15kΩ 2W J
△ R3306	QRG029J-153	OM R	15kΩ 2W J
△ R3307	QRG029J-183	OM R	18kΩ 2W J
△ R3308	QRG029J-183	OM R	18kΩ 2W J
△ R3309	QRG029J-183	OM R	18kΩ 2W J
R3325	QRZ0056-332Z	COMP. R	3.3kΩ 1/2W K
R3326	QRZ0056-332Z	COMP. R	3.3kΩ 1/2W K
R3327	QRZ0056-332Z	COMP. R	3.3kΩ 1/2W K
R3328	QRZ0056-332Z	COMP. R	3.3kΩ 1/2W K
R3329	QRZ0056-332Z	COMP. R	3.3kΩ 1/2W K
R3330	QRZ0056-332Z	COMP. R	3.3kΩ 1/2W K
△ R3363	QRC121K-105Z	COMP. R	1MΩ 1/2W K
R3364	ERZ-C05VK271Z	VARISTOR	270 Ω
△ R3391	QRD141J-154SY	C R	150kΩ 1/4W J
CAPACITOR			
△ C3361	QFH63BK-223M	MM CAP.	0.022μF 1250V K
C3363	QET52ER-106	E CAP.	10μF 250V R
COIL			
△ L3301	QQL043K-101	PEAKING COIL	100μH
△ L3302	QQL043K-121	PEAKING COIL	120μH
△ L3303	QQL043K-101	PEAKING COIL	100μH
L3304	A76186-33Z	PEAKING COIL	33μH
L3305	A76186-33Z	PEAKING COIL	33μH
L3306	A76186-33Z	PEAKING COIL	33μH
△ L3307	CJ30030-041	HEATER CHOKE	
DIODE			
D3301	MA165-T2	SI. DIODE	
D3302	MA165-T2	SI. DIODE	
D3304	MA165-T2	SI. DIODE	
D3305	MA165-T2	SI. DIODE	
D3306	MA165-T2	SI. DIODE	
D3310	MA165-T2	SI. DIODE	
D3311	MA165-T2	SI. DIODE	
D3312	MA165-T2	SI. DIODE	
D3361	RM2C-LFA1	SI. DIODE	

SYMBOL NO.	PART NO.	PART NAME	REMARKS
TRANSISTOR			
Q3301	2SC4502-T	SI. TRANSISTOR	
Q3302	2SC4502-T	SI. TRANSISTOR	
Q3303	2SC4502-T	SI. TRANSISTOR	
Q3304	2SC2068-LB	SI. TRANSISTOR	
Q3305	2SC2068-LB	SI. TRANSISTOR	
Q3306	2SC2068-LB	SI. TRANSISTOR	
OTHERS			
	CE41604-001	C. R. T. SOCKET	

## FRONT CONTROL PC BOARD Ass'y (SGZ4001A(H1))

SYMBOL NO.	PART NO.	PART NAME	REMARKS
DIODE			
D4774	GL-5HD23	L. E. D.	POWER/ON TIMER IND.
IC			
IC4841	GP1U501W	IFR DETECT UNIT	
OTHERS			
S4702	QSP4H11-C04Z	PUSH SWITCH	FUNCTION
S4703	QSP4H11-C04Z	PUSH SWITCH	LEVEL/CH-
S4704	QSP4H11-C04Z	PUSH SWITCH	LEVEL/CH+
S4705	QSP4H11-C04Z	PUSH SWITCH	POWER
S4706	QSP4H11-C04Z	PUSH SWITCH	VOL+
S4707	QSP4H11-C04Z	PUSH SWITCH	VOL-

## MTS PC BOARD Ass'y ( SX-6106A(H1) ) with in MAIN PC BOARD Ass'y

This pc boards are supplied as assemblies.

The component parts only the PC boards are available only when the parts are listed in the " PRINTED CIRCUIT BOARD PARTS LIST".

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
R6603	QRV141F-4302AY	MF R	43kΩ 1/4W F
R6608	QRV141F-6201AY	MF R	6.2kΩ 1/4W F
R6609	QRV141F-3901AY	MF R	3.9kΩ 1/4W F
R6610	QRV141F-4702AY	MF R	47kΩ 1/4W F
R6611	QRV141F-4702AY	MF R	47kΩ 1/4W F
CAPACITOR			
C6601	QEKCIHM-475GMZ	E CAP.	4.7μF 50V M
C6604	QEKCIHM-474GMZ	E CAP.	0.47μF 50V M
C6605	QEKCIHM-476GMZ	E CAP.	47μF 16V M
C6608	QEKBIHM-475GM	E CAP.	4.7μF 50V M
C6609	QEE61CK-106BZ	TAN. CAP.	10μF 16V K
C6610	QEE61CK-335BZ	TAN. CAP.	3.3μF 16V K
C6611	QEKCIHM-105GMZ	E CAP.	1μF 50V M
C6612	QEKCIHM-475GMZ	E CAP.	4.7μF 50V M
C6613	QEKCIHM-475GMZ	E CAP.	4.7μF 50V M
C6615	QEKCIHM-475GMZ	E CAP.	4.7μF 50V M
C6616	QEKCIHM-475GMZ	E CAP.	4.7μF 50V M
C6617	QEKCIHM-475GMZ	E CAP.	4.7μF 50V M
C6618	QEKCIHM-475GMZ	E CAP.	4.7μF 50V M
TRANSISTOR			
Q6601	2SC2785 (JH) -T	SI. TRANSISTOR	
Q6602	2SC2785 (JH) -T	SI. TRANSISTOR	
Q6603	2SC2785 (JH) -T	SI. TRANSISTOR	
IC			
IC6601	CXA1124AS	I. C.	

## AUDIO PC BOARD Ass'y (SGZ6004A(H1))

SYMBOL NO.	PART NO.	PART NAME	REMARKS
VARIABLE R R6315	QVPE610-103H	TRIM R (DOLBY LEV EL)	10k $\Omega$ B
RESISTOR			
R6301	QRG029J-101A	OM R	100 $\Omega$ 2W J
R6417	QRD161J-222Y	C R	2.2k $\Omega$ 1/6W J
R6621	QRG029J-390	OM R	39 $\Omega$ 2W J
R6721	QRG029J-470	OM R	47 $\Omega$ 2W J
CAPACITOR			
C6202	QEN61CM-106Z	BP E CAP.	10 $\mu$ F 16V M
C6203	QEN61CM-106Z	BP E CAP.	10 $\mu$ F 16V M
C6302	QFV71HJ-104MZ	TF CAP.	0.1 $\mu$ F 50V J
C6310	QFV71HJ-104MZ	TF CAP.	0.1 $\mu$ F 50V J
C6311	QFV71HJ-104MZ	TF CAP.	0.1 $\mu$ F 50V J
C6312	QFV71HJ-104MZ	TF CAP.	0.1 $\mu$ F 50V J
C6314	QFV71HJ-104MZ	TF CAP.	0.1 $\mu$ F 50V J
C6319	QFV71HJ-104MZ	TF CAP.	0.1 $\mu$ F 50V J
C6351	QEN61HM-105Z	BP E CAP.	1 $\mu$ F 50V M
C6352	QFV71HJ-334MZ	TF CAP.	0.33 $\mu$ F 50V J
C6353	QFV71HJ-104MZ	TF CAP.	0.1 $\mu$ F 50V J
C6401	QEN61CM-106Z	BP E CAP.	10 $\mu$ F 16V M
C6404	QEN61CM-106Z	BP E CAP.	10 $\mu$ F 16V M
C6407	QEN61CM-106Z	BP E CAP.	10 $\mu$ F 16V M
C6408	QEN61CM-106Z	BP E CAP.	10 $\mu$ F 16V M
C6409	QEN61CM-106Z	BP E CAP.	10 $\mu$ F 16V M
C6481	QEN61CM-106Z	BP E CAP.	10 $\mu$ F 16V M
C6483	QEN61HM-105Z	BP E CAP.	1 $\mu$ F 50V M
C6484	QEN61CM-106Z	BP E CAP.	10 $\mu$ F 16V M
C6486	QEN61HM-105Z	BP E CAP.	1 $\mu$ F 50V M
C6501	QEN61HM-105Z	BP E CAP.	1 $\mu$ F 50V M
C6502	QEN61HM-105Z	BP E CAP.	1 $\mu$ F 50V M
C6503	QEN61HM-105Z	BP E CAP.	1 $\mu$ F 50V M
C6602	QEN61HM-224Z	BP E CAP.	0.22 $\mu$ F 50V M
C6603	QEN61HM-224Z	BP E CAP.	0.22 $\mu$ F 50V M
C6607	QFV71HJ-563MZ	TF CAP.	0.056 $\mu$ F 50V J
C6614	QFV71HJ-563MZ	TF CAP.	0.056 $\mu$ F 50V J
C6617	QEN61CM-106Z	BP E CAP.	10 $\mu$ F 16V M
C6618	QEN61CM-106Z	BP E CAP.	10 $\mu$ F 16V M
C6622	QFV71HJ-124MZ	TF CAP.	0.12 $\mu$ F 50V J
C6623	QFV71HJ-124MZ	TF CAP.	0.12 $\mu$ F 50V J
C6624	QETB1CM-228	E CAP.	2200 $\mu$ F 16V M
C6625	QETB1CM-228	E CAP.	2200 $\mu$ F 16V M
C6627	QETB1VM-228	E CAP.	2200 $\mu$ F 35V M
C6702	QEN61HM-105Z	BP E CAP.	1 $\mu$ F 50V M
C6703	QEN61HM-105Z	BP E CAP.	1 $\mu$ F 50V M
C6707	QFV71HJ-563MZ	TF CAP.	0.056 $\mu$ F 50V J
C6714	QFV71HJ-563MZ	TF CAP.	0.056 $\mu$ F 50V J
C6722	QFV71HJ-124MZ	TF CAP.	0.12 $\mu$ F 50V J
C6723	QFV71HJ-124MZ	TF CAP.	0.12 $\mu$ F 50V J
C6724	QETB1CM-228	E CAP.	2200 $\mu$ F 16V M
C6725	QETB1CM-228	E CAP.	2200 $\mu$ F 16V M
C6727	QETB1VM-228	E CAP.	2200 $\mu$ F 35V M
C6825	QFV71HJ-124MZ	TF CAP.	0.12 $\mu$ F 50V J
C6826	QETB1CM-228	E CAP.	2200 $\mu$ F 16V M
C6828	QETB1VM-228	E CAP.	2200 $\mu$ F 35V M
DIODE			
D6301	RD5.1E (B1) -T2	ZENER DIODE	
D6471	1SS133-T2	SI. DIODE	
D6472	1SS133-T2	SI. DIODE	
D6473	1SS133-T2	SI. DIODE	



SYMBOL NO.	PART NO.	PART NAME	REMARKS
DIODE			
D6474	1SS133-T2	SI. DIODE	
D6601	1SS133-T2	SI. DIODE	
△ D6621	RD33E (B1) -T2	ZENER DIODE	
△ D6622	RD33E (B1) -T2	ZENER DIODE	
△ D6721	RD33E (B1) -T2	ZENER DIODE	
△ D6722	RD33E (B1) -T2	ZENER DIODE	
TRANSISTOR			
Q6201	2SC1740 (QR) -T	SI. TRANSISTOR	
Q6304	2SC1740 (QR) -T	SI. TRANSISTOR	
Q6401	2SC1740 (QR) -T	SI. TRANSISTOR	
Q6452	2SC1740 (QR) -T	SI. TRANSISTOR	
Q6453	2SC2878 (B) -T	SI. TRANSISTOR	
Q6454	2SC2878 (B) -T	SI. TRANSISTOR	
Q6455	2SA933 (QR) -T	SI. TRANSISTOR	
Q6471	2SC1740 (QR) -T	SI. TRANSISTOR	
Q6472	2SC1740 (QR) -T	SI. TRANSISTOR	
Q6473	2SC1740 (QR) -T	SI. TRANSISTOR	
Q6601	2SC1740 (QR) -T	SI. TRANSISTOR	
Q6602	2SC1740 (QR) -T	SI. TRANSISTOR	
Q6603	2SA933 (QR) -T	SI. TRANSISTOR	
Q6701	2SC1740 (QR) -T	SI. TRANSISTOR	
Q6702	2SC1740 (QR) -T	SI. TRANSISTOR	
Q6831	2SA933 (QR) -T	SI. TRANSISTOR	
Q6832	2SC2878 (B) -T	SI. TRANSISTOR	
IC			
△ IC6151	NE4558N	I C	
IC6152	NE4558N	I C	
IC6201	M5201L	I. C.	
IC6301	M50198P	I. C. (M)	
IC6351	LA2730	I. C. (M)	
IC6451	NE4558N	I C	
IC6481	NE4558N	I C	
IC6501	TC4052BP	I. C.	
IC6601	TDA1526	I. C.	
△ IC6602	TA8200AH	I. C.	
IC6701	TDA1526	I. C.	
△ IC6702	TA8200AH	I. C.	
IC6703	UPC1406HA	I. C.	
IC6801	UPC1406HA	I. C.	
△ IC6802	TA8213K	I C	
OTHERS			
CF6301	CSA3. 27MG	CER. RESONATOR	

## TAKE OFF PC BOARD Ass'y (SGZ8201A(H1))

SYMBOL NO.	PART NO.	PART NAME	REMARKS
CAPACITOR			
C8302	QEKC1CM-106GMZ	E CAP.	10 $\mu$ F 16V M
C8306	QEKC1HM-105GMZ	E CAP.	1 $\mu$ F 50V M
COIL			
L8301	A76186-18Z	PEAKING COIL	18 $\mu$ H
TRANSISTOR			
Q8301	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8302	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8303	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8304	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8305	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8306	2SC2785 (JH) -T	SI. TRANSISTOR	

## VM PC BOARD Ass'y (SGZ7002A(H1))

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
R7101	QRD123J-181SX	C R	180 $\Omega$ 1/2W J
R7114	QRD149J-100S	C R	10 $\Omega$ 1/4W J
R7119	CEKN001-351Z	N THERMISTOR	
R7123	QRD161J-122Y	C R	1.2k $\Omega$ 1/6W J
R7124	QRD161J-390Y	C R	39 $\Omega$ 1/6W J
R7126	QRD161J-563Y	C R	56k $\Omega$ 1/6W J
R7132	QRG029J-391A	OM R	390 $\Omega$ 2W J
CAPACITOR			
C7108	QFZ0083-823MZ	M CAP.	0.082 $\mu$ F 50V K
C7113	QETC2CM-106Z	E CAP.	10 $\mu$ F 160V M
C7114	QFM72AK-102MZ	M CAP.	1000pF 100V K
C7118	QETC0JM-107Z	E CAP.	100 $\mu$ F 6.3V M
C7124	QCY32HK-102MZ	CH C CAP.	1000pF 500V K
COIL			
L7101	A76186-82Z	PEAKING COIL	82 $\mu$ H
L7102	CE41492-001Z	CHOKE COIL	
L7103	CE41492-001Z	CHOKE COIL	
L7104	CE41492-001Z	CHOKE COIL	
L7105	CE41492-001Z	CHOKE COIL	
DIODE			
D7101	MA4110 (M) -T2	ZENER DIODE	
D7102	MA165-T2	SI. DIODE	
D7103	MA165-T2	SI. DIODE	
D7104	MA165-T2	SI. DIODE	
D7105	RHIS-T3	SI. DIODE	
D7106	RHIS-T3	SI. DIODE	
D7107	1SS133-T2	SI. DIODE	
D7108	MA4043 (M) -T2	ZENER DIODE	
TRANSISTOR			
Q7103	2SC1815 (YG)	SI. TRANSISTOR	
Q7104	2SC1815 (YG) -T	SI. TRANSISTOR	
Q7105	2SC1815 (YG) -T	SI. TRANSISTOR	
Q7106	2SA1015 (YG) -T	SI. TRANSISTOR	
Q7107	2SA1306 (Y)	SI. TRANSISTOR	
Q7108	2SC3298 (Y)	SI. TRANSISTOR	
Q7109	2SC1959 (Y) -T	SI. TRANSISTOR	
Q7110	2SC1815 (YG) -T	SI. TRANSISTOR	
OTHERS			
FR7101	QRH127J-221M	F R	220 $\Omega$ 1/2W J

## LINE FILTER PC BOARD Ass'y (SGZ9105A(H1))

SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
R9990	ERZ-C10DK361U	ZINC N RESISTOR	
CAPACITOR			
C9901	QFZ9022-104M	MF CAP.	0.1 $\mu$ FAC250V M
C9902	QFZ9022-473M	MF CAP.	0.047 $\mu$ FAC250V M
C9903	QFZ9022-473M	MF CAP.	0.047 $\mu$ FAC250V M
C9904	QFZ9022-473M	MF CAP.	0.047 $\mu$ FAC250V M
C9905	QCZ9033-222A	C CAP.	2200pFAC125V M
C9906	QCZ9033-222A	C CAP.	2200pFAC125V M
C9907	QCZ9033-222A	C CAP.	2200pFAC125V M
C9908	QCZ9033-222A	C CAP.	2200pFAC125V M
C9909	QFZ9022-473M	MF CAP.	0.047 $\mu$ FAC250V M
OTHERS			
F9901	QMF66U1-4R0S	FUSE	4.0A
LF9901	CE40248-00B	LINE FILTER	
LF9902	CE41734-00A	LINE FILTER	
LF9903	CE40847-00A	LINE FILTER	
TH9901	CE40595-001	P. THERMISTOR	
TH9902	A75414	P. THERMISTOR	

## DBF PC BOARD Ass'y (SGZ9201A(H1))

SYMBOL NO.	PART NO.	PART NAME	REMARKS
VARIABLE R			
R9504	QVPA803-503M	V R (H. MODULATION)	50k $\Omega$ B
R9513	QVPA803-503M	V R (V. MODULATION)	50k $\Omega$ B
RESISTOR			
R9523	QRD121J-823SY	C R	82k $\Omega$ 1/2W J
R9531	QRD121J-103SY	C R	10k $\Omega$ 1/2W J
R9532	QRC121K-472Z	COMP. R	4.7k $\Omega$ 1/2W K
R9544	QRD121J-823SY	C R	82k $\Omega$ 1/2W J
R9553	QRZ0039-562	COMP. R	5.6k $\Omega$ 1/2W K
CAPACITOR			
C9503	QFV71HJ-104MZ	TF CAP.	0.1 $\mu$ F 50V J
C9509	QFV71HJ-154MZ	TF CAP.	0.15 $\mu$ F 50V J
C9512	QFZ0081-1002S	MPP CAP.	0.01 $\mu$ F 1600V $\pm$ 3%
C9515	QFZ0081-1001S	MPP CAP.	1000pF 1600V $\pm$ 3%
C9516	QFV71HJ-124MZ	TF CAP.	0.12 $\mu$ F 50V J
C9517	QFV71HJ-124MZ	TF CAP.	0.12 $\mu$ F 50V J
TRANSFORMER			
T9501	CE41576-00A	H. PICK-UP TRANS	
DIODE			
D9501	1SS81-T2	SI. DIODE	
D9502	1SS81-T2	SI. DIODE	
D9503	MA165-T2	SI. DIODE	
D9504	ES1F	DIODE	
D9505	MA165-T2	SI. DIODE	
D9506	MA165-T2	SI. DIODE	
D9507	ES1F	DIODE	
D9509	ES1F	DIODE	
D9510	MA165-T2	SI. DIODE	
D9511	MA165-T2	SI. DIODE	
TRANSISTOR			
Q9501	2SC1740 (QR) -T	SI. TRANSISTOR	
Q9502	2SC1740 (QR) -T	SI. TRANSISTOR	
Q9503	2SC1740 (QR) -T	SI. TRANSISTOR	
Q9504	2SA933 (QR) -T	SI. TRANSISTOR	
Q9505	2SC1740 (QR) -T	SI. TRANSISTOR	
Q9506	2SC4256	SI. TRANSISTOR	
Q9507	2SC4256	SI. TRANSISTOR	
Q9508	2SA933 (QR) -T	SI. TRANSISTOR	
Q9509	2SC1740 (QR) -T	SI. TRANSISTOR	
Q9510	2SC4256	SI. TRANSISTOR	
Q9511	2SC4256	SI. TRANSISTOR	
Q9512	2SA933 (QR) -T	SI. TRANSISTOR	
Q9513	2SC1740 (QR) -T	SI. TRANSISTOR	
Q9514	2SC1740 (QR) -T	SI. TRANSISTOR	
Q9515	2SA933 (QR) -T	SI. TRANSISTOR	
Q9516	2SC1740 (QR) -T	SI. TRANSISTOR	
Q9517	2SC1740 (QR) -T	SI. TRANSISTOR	
OTHERS			
FR9539	QRH127J-101M	F R	100 $\Omega$ 1/2W J
SG9501	CE41680-302	ARESTOR	

## DEG PC BOARD Ass'y (SGZ9301A(H1))

SYMBOL NO.	PART NO.	PART NAME	REMARKS
OTHERS			
S9903	QSP4C11-C02	PUSH SWITCH	DEGAUSS

## PIP INTERFACE PC BOARD Ass'y(SGZ8101A)

SYMBOL NO.	PART NO.	PART NAME	REMARKS
VARIABLE R R8214	QVPA601-471A	V R (COMB FILTER)	470 $\Omega$ B
RESISTOR R8801	QRD149J-100S	C R	10 $\Omega$ 1/4W J
R8904	QRV141F-1502Y	MF R	15k $\Omega$ 1/4W F
R8905	QRV141F-4701Y	MF R	4.7k $\Omega$ 1/4W F
CAPACITOR C8810	QFV71HJ-473MZ	TF CAP.	0.047 $\mu$ F 50V J
TRANSFORMER T8201	CE40176-001	DL P. TRANSF.	
COIL L8201	A76186-27Z	PEAKING COIL	27 $\mu$ H
L8202	CE40041-5R6	PEAKING COIL	
DIODE D8820	MA165-T2	SI. DIODE	
D8821	MA165-T2	SI. DIODE	
D8830	MA165-T2	SI. DIODE	
D8831	MA165-T2	SI. DIODE	
D8901	S1WB10	SI. DIODE	
D8902	S1WB10	SI. DIODE	
TRANSISTOR Q8201	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8202	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8203	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8204	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8205	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8206	2SA1175 (JH) -T	SI. TRANSISTOR	
Q8301	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8302	2SA1175 (JH) -T	SI. TRANSISTOR	
Q8701	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8702	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8703	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8704	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8705	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8820	2SC2785 (JH) -T	SI. TRANSISTOR	
Q8901	2SA1307 (OY)	SI. TRANSISTOR	
IC IC8801	M51321P	I. C.	
IC8802	TC4066BP	I. C. (M)	
IC8902	AN7812F	I. C.	
IC8903	M5236L	I. C.	
OTHERS DL8201	CE40907-A01	DELAY LINE (1H)	

## PIP PC BOARD Ass'y(SGZ-8001A)

SYMBOL NO.	PART NO.	PART NAME	REMARKS		
VARIABLE R					
R8103	QVPE604-503H	V R (SUB COLOR)	50k $\Omega$	B	
R8112	QVPE604-503H	V R (SUB TINT)	50k $\Omega$	B	
R8241	QVPE604-102H	V R (V. FILTER)	1k $\Omega$	B	
R8332	QVPA601-222A	V R (R-Y LEVEL)	2. 2k $\Omega$	B.	
R8358	QVPA601-222A	V R (PIP TINT)	2. 2k $\Omega$	B	
R8706	QVPE604-203H	V R (RVFD)	20k $\Omega$	B	
CAPACITOR					
C8101	QCT81CH-152YLS	CHIP C CAP.	1500pF	16V	H
C8106	QCT81CH-8R0YLS	CHIP C CAP.	8. 0pF	16V	H
C8108	QEB51HM-104M	E CAP.	0. 1 $\mu$ F	50V	M
C8109	QCT81CH-100YLS	CHIP C CAP.	10pF	16V	H
C8112	QEPA1EM-475M	BP E CAP.	4. 7 $\mu$ F	25V	M
C8113	QAT3110-100A	TRIM CAP.	10pF	100V	
C8117	QCT81CH-5R0YLS	CHIP C CAP.	5. 0pF	16V	H
C8121	QEKB1HM-105GM	E CAP.	1 $\mu$ F	50V	M
C8122	QEKB1HM-474GM	E CAP.	0. 47 $\mu$ F	50V	M
C8123	QEKB1HM-105GM	E CAP.	1 $\mu$ F	50V	M
C8126	QCT81CH-221YLS	CHIP C CAP.	220pF	16V	H
C8127	QCT81CH-221YLS	CHIP C CAP.	220pF	16V	H
C8129	QEKB1CM-476M	E CAP.	47 $\mu$ F	16V	M
C8133	QEKB1CM-107M	E CAP.	100 $\mu$ F	16V	M
C8141	QEKB1CM-476M	E CAP.	47 $\mu$ F	16V	M
C8201	QEKB1CM-336M	E CAP.	33 $\mu$ F	16V	M
C8202	QEKB1HM-475GM	E CAP.	4. 7 $\mu$ F	50V	M
C8203	QEKB1HM-105GM	E CAP.	1 $\mu$ F	50V	M
C8204	QEKB1CM-336M	E CAP.	33 $\mu$ F	16V	M
C8205	QEKB1HM-105GM	E CAP.	1 $\mu$ F	50V	M
C8206	QCT81CH-221YLS	CHIP C CAP.	220pF	16V	H
C8211	QEKB1HM-105GM	E CAP.	1 $\mu$ F	50V	M
C8212	QEKB1CM-476M	E CAP.	47 $\mu$ F	16V	M
C8218	QEPB1HM-105GM	BP E CAP.	1 $\mu$ F	50V	M
C8219	QEKB1HM-105GM	E CAP.	1 $\mu$ F	50V	M
C8220	QEKB1HM-105GM	E CAP.	1 $\mu$ F	50V	M
C8221	QEKB1HM-335GM	E CAP.	3. 3 $\mu$ F	50V	M
C8223	QCT81CH-680YLS	CHIP C CAP.	68pF	16V	H
C8224	QEKB1CM-476M	E CAP.	47 $\mu$ F	16V	M
C8227	QCT81CH-470YLS	CHIP C CAP.	47pF	16V	H
C8228	QCT81CH-470YLS	CHIP C CAP.	47pF	16V	H
C8230	QCS81HJ-561YLS	CHIP CH C CAP.	560pF	50V	J
C8302	QEKB1HM-105GM	E CAP.	1 $\mu$ F	50V	M
C8304	QCT81CH-561YLS	CHIP C CAP.	560pF	16V	H
C8306	QCT81CH-3R0YLS	CHIP C CAP.	3. 0pF	16V	H
C8308	QAT3110-200A	TRIM CAP.	20pF	100V	
C8310	QEKB1HM-225GM	E CAP.	2. 2 $\mu$ F	50V	M
C8311	QEPB1HM-105GM	BP E CAP.	1 $\mu$ F	50V	M
C8312	QEKB1HM-474GM	E CAP.	0. 47 $\mu$ F	50V	M
C8317	QCT81CH-120YLS	CHIP C CAP.	12pF	16V	H
C8322	QEKB1CM-226GM	E CAP.	22 $\mu$ F	16V	M
C8323	QEN51CM-226	BP E CAP.	22 $\mu$ F	16V	M
C8324	QEPB1HM-105GM	BP E CAP.	1 $\mu$ F	50V	M
C8325	QEN51CM-226	BP E CAP.	22 $\mu$ F	16V	M
C8326	QEPB1HM-105GM	BP E CAP.	1 $\mu$ F	50V	M
C8328	QEN51HM-105	BP E CAP.	1 $\mu$ F	50V	M
C8333	QCT81CH-560YLS	CHIP C CAP.	56pF	16V	H
C8336	QEKB1CM-476M	E CAP.	47 $\mu$ F	16V	M
C8338	QEKB1HM-105GM	E CAP.	1 $\mu$ F	50V	M
C8341	QEKB1AM-107M	E CAP.	100 $\mu$ F	10V	M
C8342	QCT81CH-470YLS	CHIP C CAP.	47pF	16V	H

SYMBOL NO.	PART NO.	PART NAME	REMARKS		
CAPACITOR					
C8344	QCT81CH-101YLS	CHIP C CAP.	1'00pF	16V	H
C8346	QCT81CH-101YLS	CHIP C CAP.	100pF	16V	H
C8350	QCT81CH-5R0YLS	CHIP C CAP.	5. 0pF	16V	H
C8504	QEKB1HM-105GM	E CAP.	1μF	50V	M
C8505	QEKB1CM-106GM	E CAP.	10μF	16V	M
C8507	QCT81CH-270YLS	CHIP C CAP.	27pF	16V	H
C8509	QEN51HM-335	BP E CAP.	3. 3μF	50V	M
C8510	QCT81CH-680YLS	CHIP C CAP.	68pF	16V	H
C8702	QCT81CH-150YLS	CHIP C CAP.	15pF	16V	H
C8703	QCT81CH-150YLS	CHIP C CAP.	15pF	16V	H
C8707	QEKB1CM-106GM	E CAP.	10μF	16V	M
C8721	QEKB1CM-106GM	E CAP.	10μF	16V	M
C8723	QEKB1CM-106GM	E CAP.	10μF	16V	M
C8741	QEKB1CM-106GM	E CAP.	10μF	16V	M
C8742	QEKB1CM-476M	E CAP.	47μF	16V	M
C8745	QEKB1CM-476M	E CAP.	47μF	16V	M
C8746	QAT3110-300A	TRIM CAP.	30pF	100V	
C8747	QFV81HJ-104M	TF CAP.	0. 1μF	50V	J
C8748	QEKB1CM-476M	E CAP.	47μF	16V	M
C8750	QCT25RH-120A	C CAP.	12pF	50V	J
C8751	QCT25UJ-7R0Z	C CAP.	7. 0pF	50V	J
C8761	QAT3210-500A	TRIM CAP.	50pF		
C8762	QAT3110-300A	TRIM CAP.	30pF	100V	
C8763	QEKB1CM-476M	E CAP.	47μF	16V	M
C8765	QCT25TH-270A	C CAP.	27pF	50V	J
C8766	QCT25CH-220A	C CAP.	22pF	50V	J
C8767	QFM11HJ-104M	M CAP.	0. 1μF	50V	J
C8802	QEKB1CM-476M	E CAP.	47μF	16V	M
C8806	QEKB1CM-106GM	E CAP.	10μF	16V	M
C8807	QCT81CH-560YLS	CHIP C CAP.	56pF	16V	H
C8808	QCT81CH-471YL	CHIP C CAP.	470pF	16V	H
C8822	QEKB1CM-476M	E CAP.	47μF	16V	M
C8826	QEKB1HM-225GM	E CAP.	2. 2μF	50V	M
C8831	QEKB1CM-476M	E CAP.	47μF	16V	M
C8834	QCT81CH-220YLS	CHIP C CAP.	22pF	16V	H
C8841	QEKB1CM-476M	E CAP.	47μF	16V	M
C8846	QEKB1CM-476M	E CAP.	47μF	16V	M
C8848	QEKB1CM-476M	E CAP.	47μF	16V	M
C8861	QEKB1CM-476M	E CAP.	47μF	16V	M
C8863	QEKB1CM-476M	E CAP.	47μF	16V	M
C8867	QEKB1HM-105GM	E CAP.	1μF	50V	M
C8870	QEKB1AM-107M	E CAP.	100μF	10V	M
C8901	QEKB1AM-107M	E CAP.	100μF	10V	M
C8903	QEKB1AM-107M	E CAP.	100μF	10V	M
TRANSFORMER					
T8101	CE41301-001	B. P. F.			
T8201	CE41939-001	VIDEO FILTER			
T8202	CE41939-001	VIDEO FILTER			
T8204	CE41921-001	250N DELAY LINE			
COIL					
L8101	A76186-47	PEAKING COIL	47μH		
L8102	A76186-47	PEAKING COIL	47μH		
L8141	A76186-3. 3	PEAKING COIL	3. 3μH		
L8301	A76186-5. 6	PEAKING COIL	5. 6μH		
L8302	A76186-82	PEAKING COIL	82μH		
L8303	A76186-47	PEAKING COIL			
L8701	A76186-3. 3	PEAKING COIL	3. 3μH		
L8721	A76186-3. 3	PEAKING COIL	3. 3μH		

SYMBOL NO.	PART NO.	PART NAME	REMARKS
COIL			
L8722	A76186-3.3	PEAKING COIL	3.3 $\mu$ H
L8741	A76186-3.3	PEAKING COIL	3.3 $\mu$ H
L8742	A76186-3.3	PEAKING COIL	3.3 $\mu$ H
L8743	A76186-3.3	PEAKING COIL	3.3 $\mu$ H
L8761	A76186-3.3	PEAKING COIL	3.3 $\mu$ H
L8801	A76186-3.3	PEAKING COIL	3.3 $\mu$ H
L8802	A76186-3.3	PEAKING COIL	3.3 $\mu$ H
L8841	A76186-3.3	PEAKING COIL	3.3 $\mu$ H
L8842	A76186-3.3	PEAKING COIL	3.3 $\mu$ H
L8861	A76186-3.3	PEAKING COIL	3.3 $\mu$ H
L8862	A76186-3.3	PEAKING COIL	3.3 $\mu$ H
DIODE			
D8201	MA151K-W	DIODE	
D8701	MA3056 (H) -W	ZENER DIODE	
D8702	MA151K-W	DIODE	
D8703	MA151K-W	DIODE	
D8721	MA3056 (H) -W	ZENER DIODE	
D8722	MA3056 (H) -W	ZENER DIODE	
D8723	MA3056 (H) -W	ZENER DIODE	
D8741	MA151K-W	DIODE	
TRANSISTOR			
Q8101	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8102	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8103	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8141	2SA1022 (BC) -W	SI. TRANSISTOR	
Q8142	2SA1022 (BC) -W	SI. TRANSISTOR	
Q8201	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8202	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8203	2SA1022 (BC) -W	SI. TRANSISTOR	
Q8205	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8206	2SA1022 (BC) -W	SI. TRANSISTOR	
Q8207	2SA1022 (BC) -W	SI. TRANSISTOR	
Q8209	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8210	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8211	2SA1022 (BC) -W	SI. TRANSISTOR	
Q8212	2SA1022 (BC) -W	SI. TRANSISTOR	
Q8213	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8216	2SA1022 (BC) -W	SI. TRANSISTOR	
Q8301	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8303	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8304	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8305	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8306	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8307	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8308	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8310	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8311	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8312	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8501	2SA1022 (BC) -W	SI. TRANSISTOR	
Q8701	2SA1022 (BC) -W	SI. TRANSISTOR	
Q8741	2SC2778 (BC) -W	SI. TRANSISTOR	
Q8742	2SC2778 (BC) -W	SI. TRANSISTOR	
IC			
IC8101	M51271FP-W	I. C.	
IC8141	MC74HC4053F-W	I. C. (M)	
IC8201	M51285BFP	I. C.	
IC8202	CXL5504M-W	I. C.	
IC8203	TC4066BF-W	I. C.	



SYMBOL NO.	PART NO.	PART NAME	REMARKS
IC			
IC8301	MC74HC4053F-W	I. C. (M)	
IC8501	M52684AFP-W	I. C. (M)	
IC8701	M37450M8-334FP	I. C.	
IC8702	MN1380-S	I. C.	
IC8721	M65105BFP	I. C.	
IC8741	MC74HC4053F-W	I. C. (M)	
IC8742	SN74S124N	I. C. (DIGI-OTHER)	
IC8743	MC4044	I. C.	
IC8761	SN74S124N	I. C. (DIGI-OTHER)	
IC8801	SN74HC04NS-W	I. C.	
IC8802	M52678FP-W	I. C. (M)	
IC8803	M52678FP-W	I. C. (M)	
IC8841	M5M4C500L	I. C.	
IC8842	M5M4C500L	I. C.	
IC8843	M5M4C500L	I. C.	
IC8844	SN74HC157NS-W	I. C.	
IC8845	SN74HC157NS-W	I. C.	
IC8861	M52683FP	I. C.	
OTHERS			
EM8003	CE41865-101Y	EMI FILTER	
EM8004	CE41865-101Y	EMI FILTER	
EM8006	CE41865-101Y	EMI FILTER	
EM8007	CE41865-101Y	EMI FILTER	
EM8008	CE41865-101Y	EMI FILTER	
EM8015	CE41144-005	NOISE FILTER	
EM8016	CE41144-005	NOISE FILTER	
EM8017	CE41865-101Y	EMI FILTER	
EM8019	CE41144-005	NOISE FILTER	
EM8028	CE41865-101Y	EMI FILTER	
EM8029	CE41865-101Y	EMI FILTER	
EM8030	CE41865-101Y	EMI FILTER	
EM8032	CE41865-101Y	EMI FILTER	
EM8033	CE41865-101Y	EMI FILTER	
EM8034	CE41865-101Y	EMI FILTER	
EM8036	CE41865-101Y	EMI FILTER	
EM8037	CE41865-101Y	EMI FILTER	
EM8039	CE41865-101Y	EMI FILTER	
EM8040	CE41865-101Y	EMI FILTER	
X8101	CE40405-001	CRYSTAL (4FSC)	
X8301	CSB500F9	CER. RESONATOR	
X8302	CE40405-001	CRYSTAL (4FSC)	
X8501	CSB500F9	CER. RESONATOR	
X8701	CSA10.0MT040	C. RESONATOR	

## MODULE P.C BOARD PARTS LIST

The following module pc boards are supplied as assemblies.

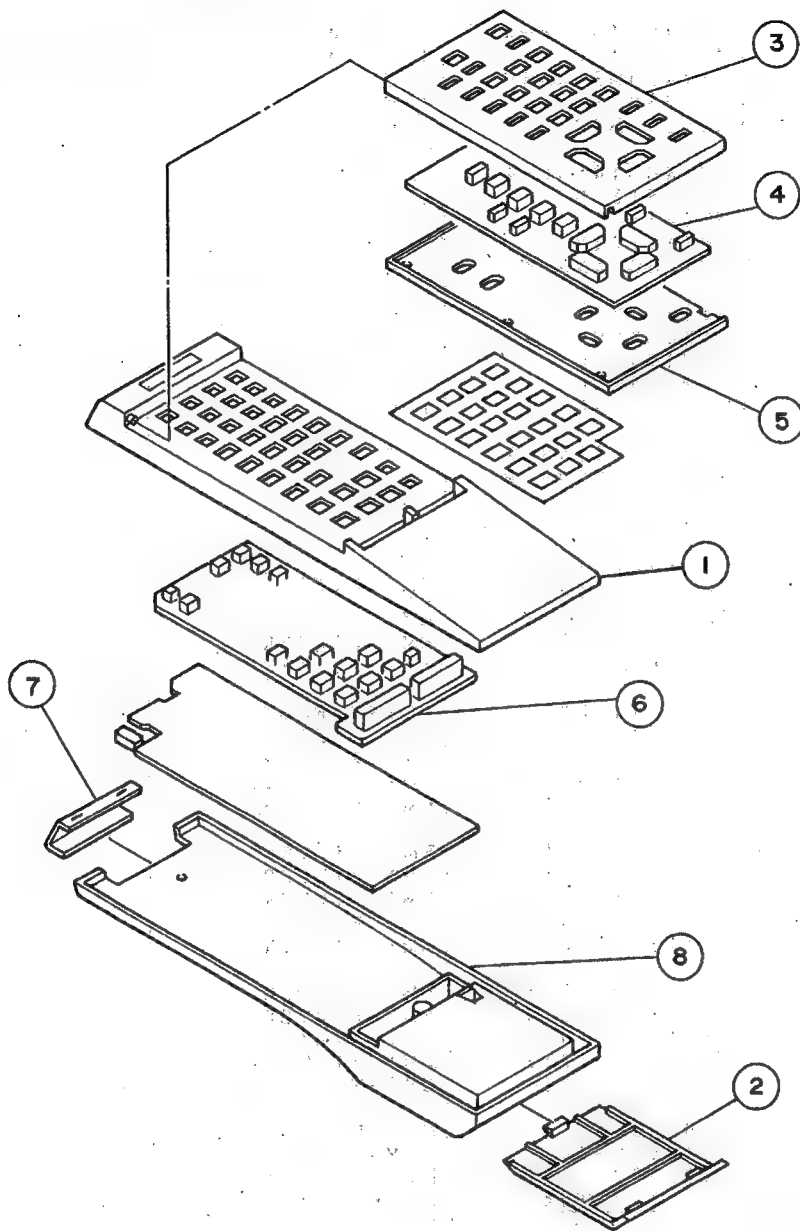
The component parts on the module PC boards are available only when the parts are listed in the

"MODULE PRINTED-CIRCUIT BOARD PARTS LIST."

PIF MODULE PC BOARD Ass'y (SGZ-F002A) with in MAIN PC BOARD Ass'y

SIF MODULE PC BOARD Ass'y (SGZ-F003A) with in MAIN PC BOARD Ass'y

# REMOTE CONTROL TRANSMITTER



## REMOTE CONTROL TRANSMITTER PARTS LIST ( RM-C954-KD )

SYMBOL NO.	PART NO.	PART NAME	REMARKS
1	FA62C2806-SA	FRONT CASE	
2	FA11F2301	BATTERY COVER	
3	FA62C8308-SA	CASE (D)	Include No. 4, 5
4	FA42B8802	RUBBER SHEET	
5	FA11F2501	CASE (E)	
6	FA42B8905	RUBBER SHEET	
7	FA58B1301	FILTER	
8	FA11G7001	CASE (B)	

# JVC AV-3590S<sup>(US)</sup> SCHEMATIC DIAGRAM

Ⓐ

AV-3590S


AV-3590S

Ⓐ

## NOTICE

- The voltage reading and waveform are measured at each point with a multi-meter and an oscilloscope while receiving a service color bar signal with a sufficient sensitivity.
- The measurements were made with each VR under the condition just after the shipment. The figures of the signal circuits may be more or less different after adjustments, so use the figures simply for reference.
- Multimeter used.  
DC 20kΩ/V  
Given figures are all DC voltages.
- Sweep speed of oscilloscope  
H→20μS/div. V→5mS/div.
- Others—sweep speed specified
- Since the schematic diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

## SAFETY

The components identified by the  symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

## INDICATION OF PARTS SYMBOL

Inside board (Example) SGZ1007A (H1): R1209→R209  
Outside board (Example) R0001→R01

## SCHEMATIC DIAGRAM INDICATION

### Resistor

- Resistance value  
Without unit : [Ω] K : [kΩ] M : [MΩ]
- Rated allowable power  
Without indication : 1/6W
- \* Others Indicated
- Type  
Without indication : Carbon resistor  
OMR : Oxide metal film resistor  
UNFR : Unflammable resistor  
MFR : Metal film resistor  
MPR : Metal plate resistor  
FR : Fusible resistor

\* Composition resistor 1/2 [W] is indicated as 1/2S or comp.

### Capacitor

- Capacitance  
Above 1 : [pF] Below 1 : [μF]
- Withstand voltage  
Without indication : DC 50 [V]  
Others : DC withstand voltage [V]  
AC indicated : AC withstand voltage [V]
- Indications for electrolytic capacitors are as follows.  
(Example)  
47/50→capacitance [μF]/withstand voltage [V]
- Type  
Without indication : Ceramic capacitor  
MY : Mylar capacitor  
MM : Metalized mylar capacitor  
PP : Polypropylene capacitor  
MPP : Metalized polypropylene capacitor  
MF : Metalized film capacitor  
TF : Thin film capacitor  
BP : Bipolar electrolytic capacitor  
TAN : Tantalum capacitor

### Coil




Without unit : [μH]

### Power Supply






— : B<sub>1</sub> (120V) — : B<sub>2</sub> (12V)  
— : 9V — : -9V — : 5V

\* Each voltage reading specified



### Connection method

-  : Connector
-  : Receptacle
-  : Wrapping or soldering

### Test point & GND. symbol.

-  : Test point by miniature GT pin
-  : Only test point display
-  : Live (Primary) side ground
-  : Neutral (Secondary) side ground
-  : Digital circuit ground

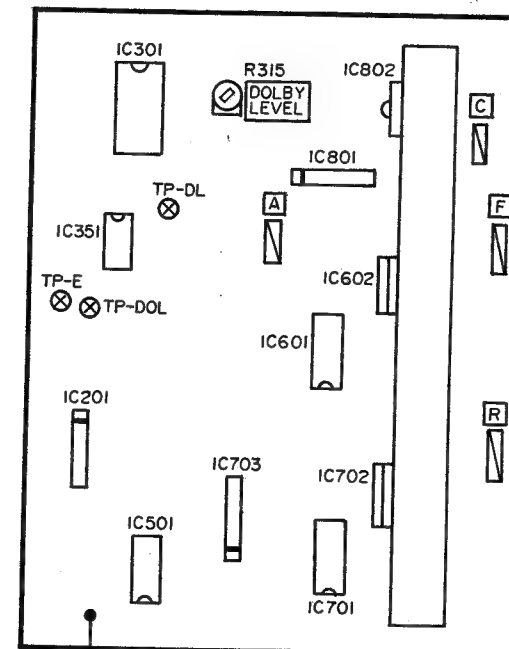
### NOTE FOR SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE (primary: ) side GND and the NEUTRAL (secondary: ) side GND.

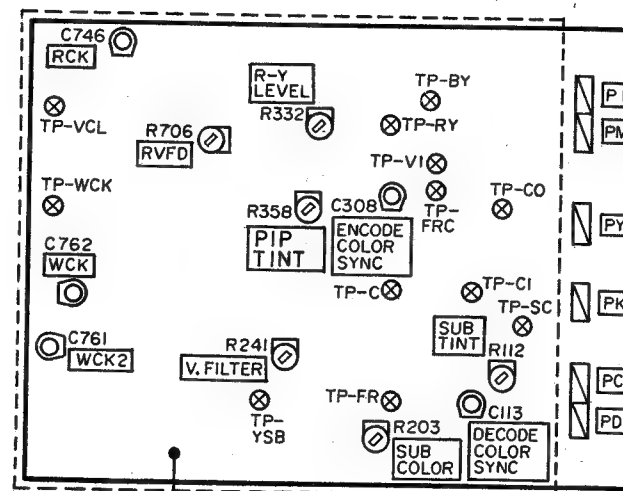
Don't short between the LIVE side GND and NEUTRAL side GND or never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and NEUTRAL side GND at the same time.

If above note will not be kept, a fuse or any parts will be broken.

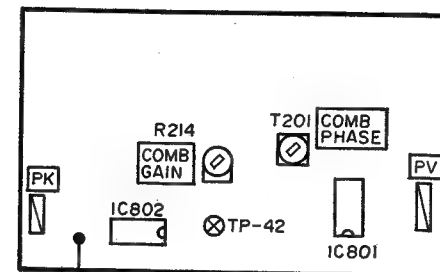
TOP  
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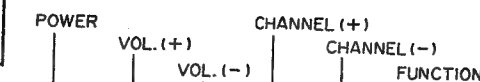
AUDIO PCB ASSY



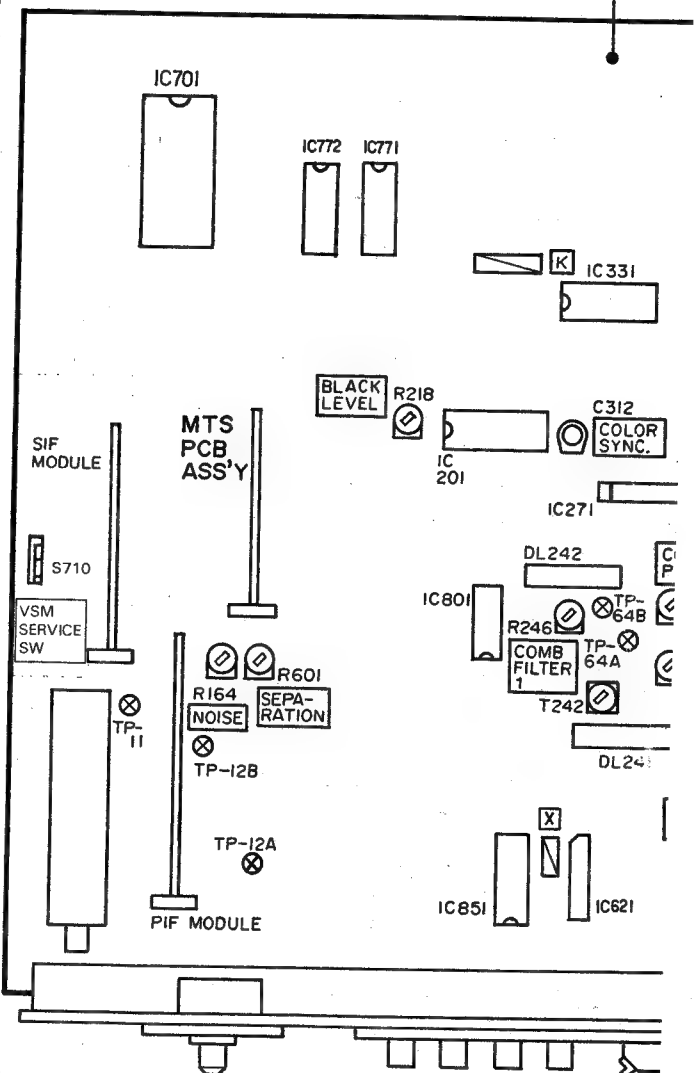
PIP PCB ASSY



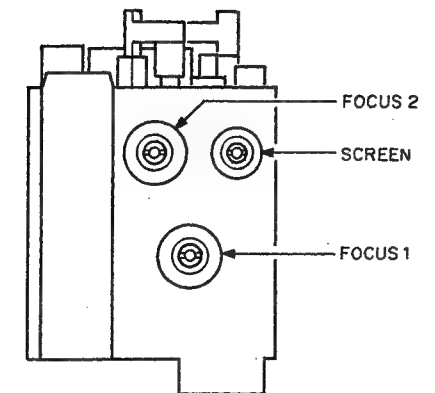
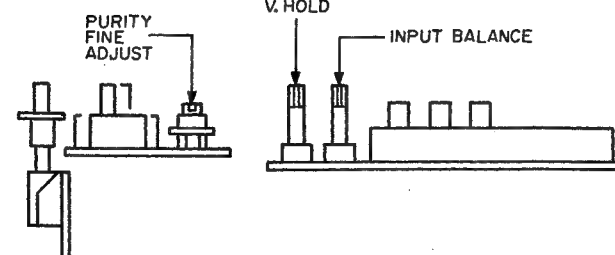
PIP INTERFACE PCB ASSY



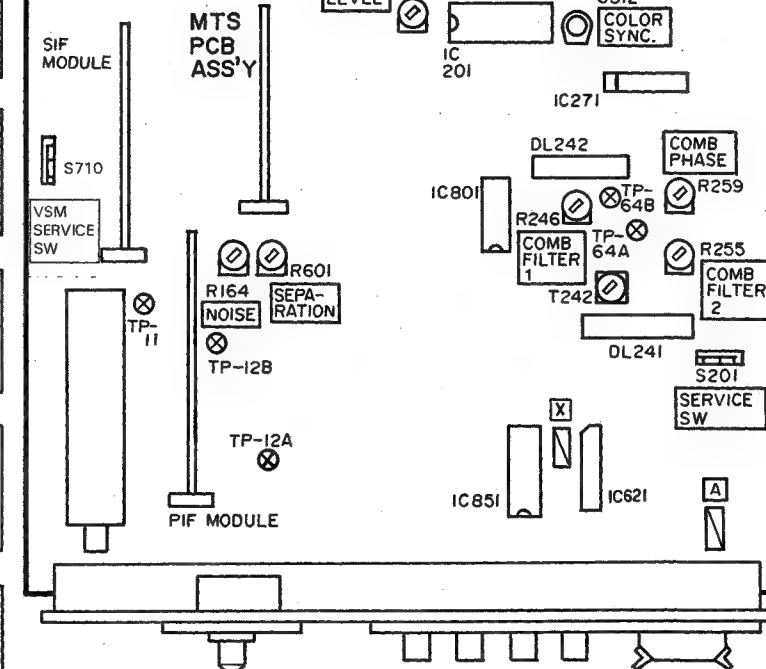
MAIN PCB ASSY



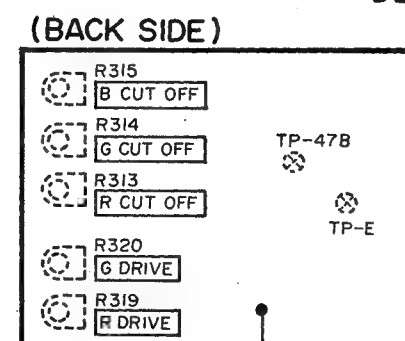
TOP  
↑



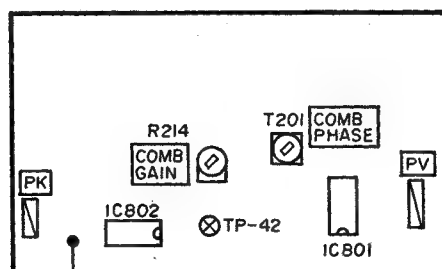
DBF PCB ASS'Y



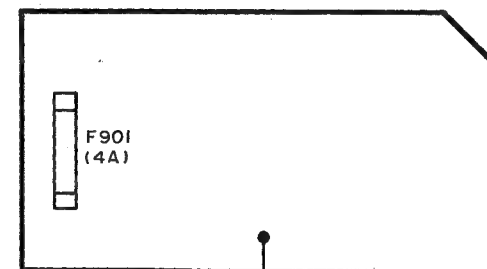
DEF. & POWER PCB ASS'Y



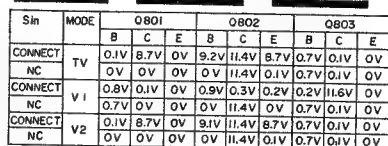
CRT SOCKET PCB ASS'Y



# PIP INTERFACE PCB ASS'Y



LINE FILTER PCB ASS'Y





# MAIN PCB BACK PATTERN

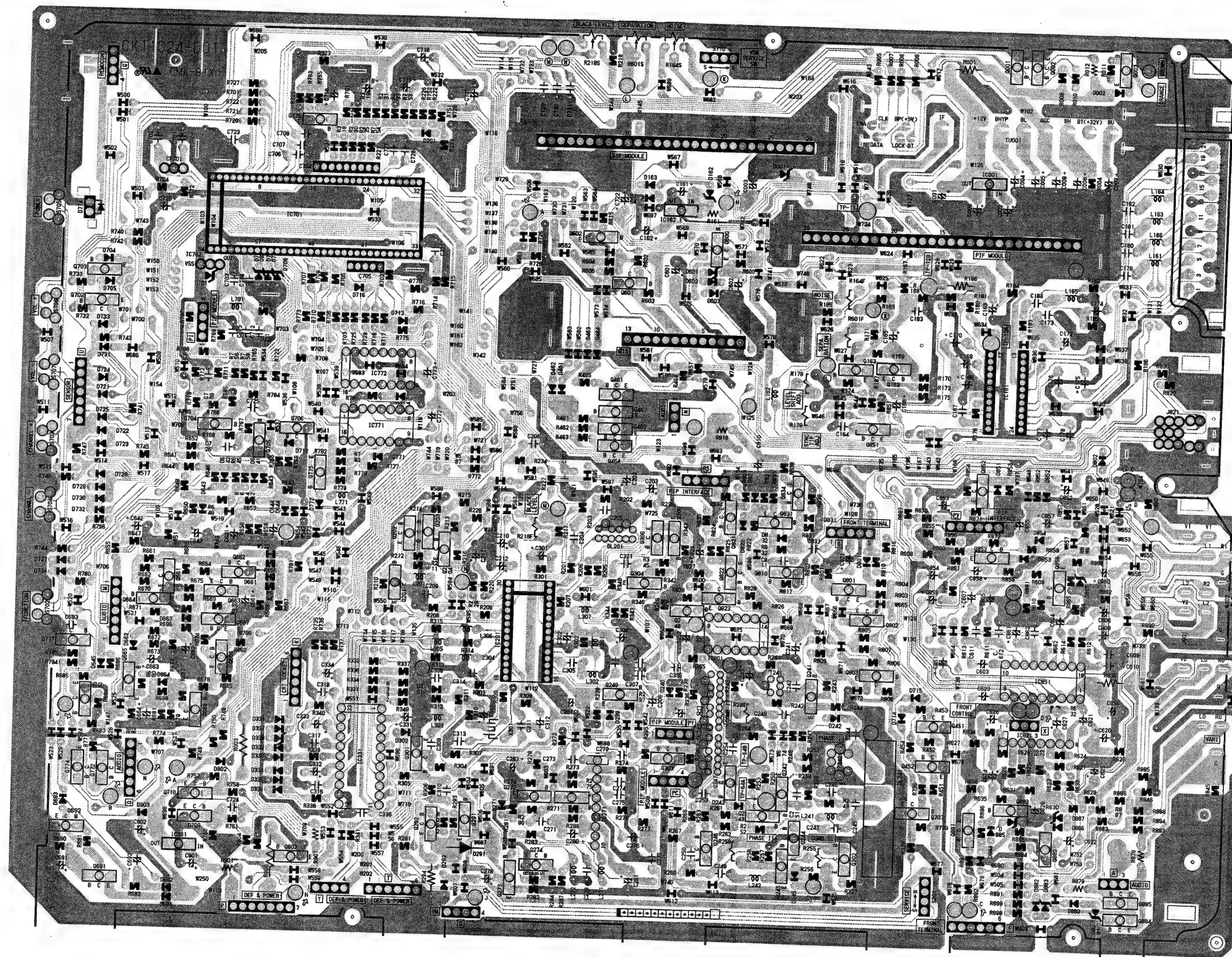
← FRONT

(A)

AV-3590S

AV-3590S

(A)

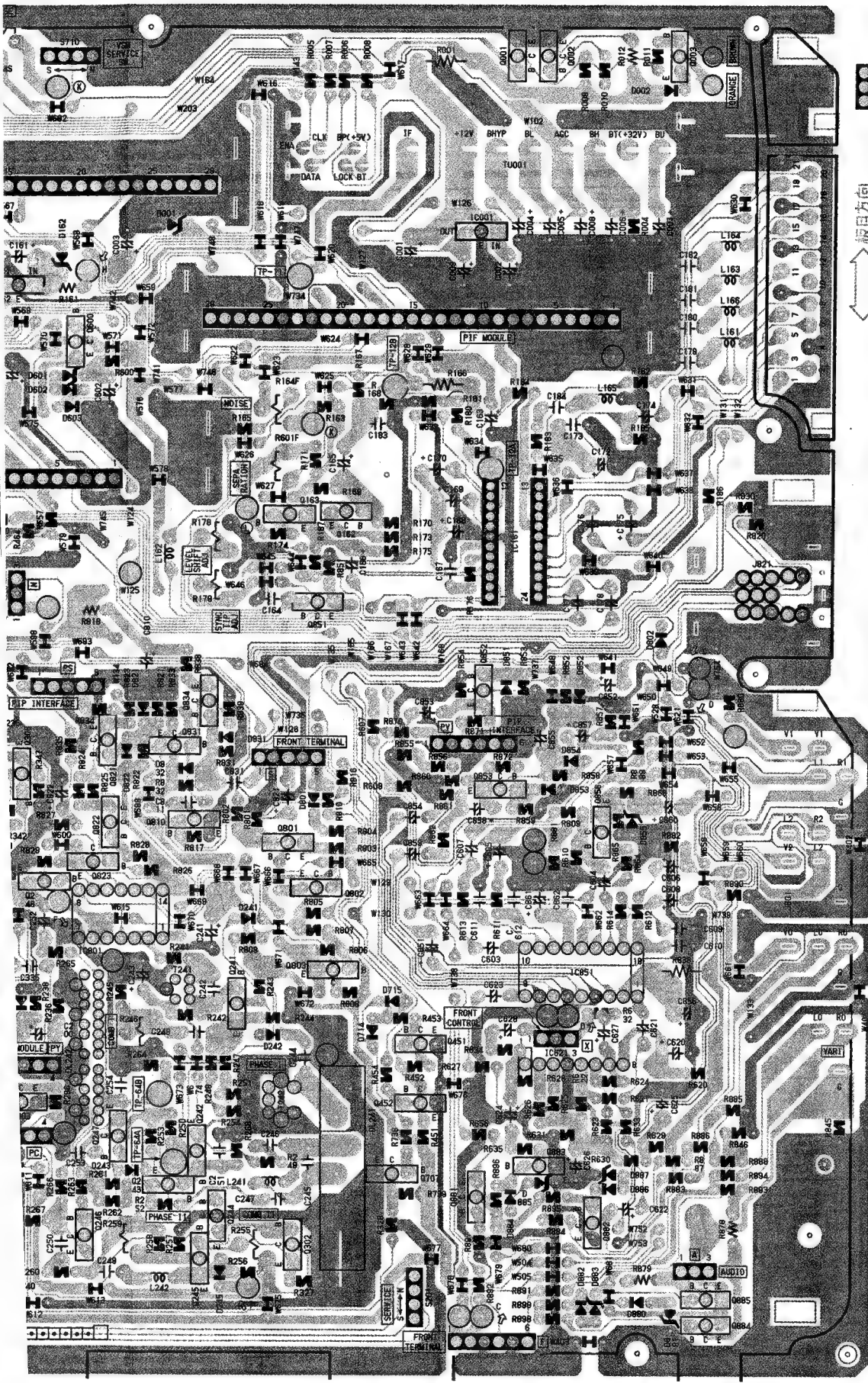


## CHANNEL CHART

MODE		BAND	CHANNEL		TUNER BAND	MODE		BA
T	V		REAL	DISPLAY		T	V	
O	O	VL	02	I	I	X	O	U T
			03					
			04					
			05					
			06					
			07					
	VH	08	II					
		09						
		10						
		11						
		12						
		13						
		X		O				
B	15							
C	16							
D	17							
E	18							
F	19							
G	20							
H	21							
I	22							
SU PER	J		23					
	K		24					
	L		25					
	M		26					
	N		27					
	O		28					
	P		29					
	Q		30					
	R		31					
	S		32					
	T		33					
	U		34					
V	35							
W	36							
O	HY PER	W+1	37	IV				
		W+2	38					
		W+3	39					
		W+4	40					
		W+5	41					
		W+6	42					
		W+7	43					
		W+8	44					
		W+9	45					
		W+10	46					
		W+11	47					
	UL TRA	W+12	48					
		W+13	49					
		W+14	50					
		W+15	51					
		W+16	52					
		W+17	53					
		W+18	54					
W+19	55							
W+20	56							
W+21	57							
W+22	58							
W+23	59							
W+24	60							
W+25	61							
W+26	62							
W+27	63							
W+28	64							
O	O	UL TRA	W+29	65				
			W+30	66				
			W+31	67				
			W+32	68				
			W+33	69				
			W+34	70				

NOTE: TO RECEIVE THE SUBSCRIPTION OR PRE-PROGRAMMING FROM CERTAIN CABLE COMPANIES, SPECIAL ADAPTERS MAY BE REQUIRED.





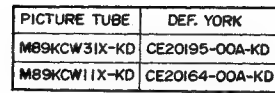
CHANNEL CHART

MODE				MODE							
T	V	CATV	BAND	T	V	CATV	BAND				
O	O		VL	02	X	O	UL TRA	W+35	71	IV	
				03				72			
				04				73			
				05				74			
				06				75			
				07				76			
			VH	08				II	W+40		77
				09					W+41		78
				10					W+42		79
				11					W+43		80
				12					W+44		81
				13					W+45		82
									W+46		83
X	O		MID	A	14	II	W+47	84			
				B	15		I	W+48	85		
				C	16		W+49	86			
				D	17		W+50	87			
				E	18		W+51	88			
				F	19		W+52	89			
			SU PER	G	20		W+53	90			
				H	21		W+54	91			
				I	22		W+55	92			
				J	23		W+56	93			
				K	24		W+57	94			
				L	25		W+58	95			
				M	26		W+59	100			
X	O		SU PER	N	27	W+60	101	I			
				O	28	W+61	102				
				P	29	W+62	103				
				Q	30	W+63	104				
				R	31	W+64	105				
				S	32	W+65	106				
			HY PER	T	33	W+66	107				
				U	34	W+67	108				
				V	35	W+68	109				
				W	36	W+69	110				
				W+1	37	W+70	111				
				W+2	38	W+71	112				
				W+3	39	W+72	113				
X	O		HY PER	W+4	40	W+73	114				
				W+5	41	W+74	115				
				W+6	42	W+75	116				
				W+7	43	W+76	117				
				W+8	44	W+77	118				
				W+9	45	W+78	119				
			UL TRA	W+10	46	W+79	120				
				W+11	47	W+80	121				
				W+12	48	W+81	122				
				W+13	49	W+82	123				
				W+14	50	W+83	124				
				W+15	51	W+84	125				
				W+16	52	A - 8	01				
W+17	53	A - 4	96								
W+18	54	A - 3	97								
W+19	55	A - 2	98								
W+20	56	A - 1	99								
W+21	57	SUB MID	I								
W+22	58										
W+23	59										
W+24	60										
W+25	61										
W+26	62										
W+27	63										
W+28	64										
W+29	65	IV									
W+30	66										
W+31	67										
W+32	68										
W+33	69	TOTAL 180 ch	{	VHF 124 ch							
W+34	70				UHF 56 ch						





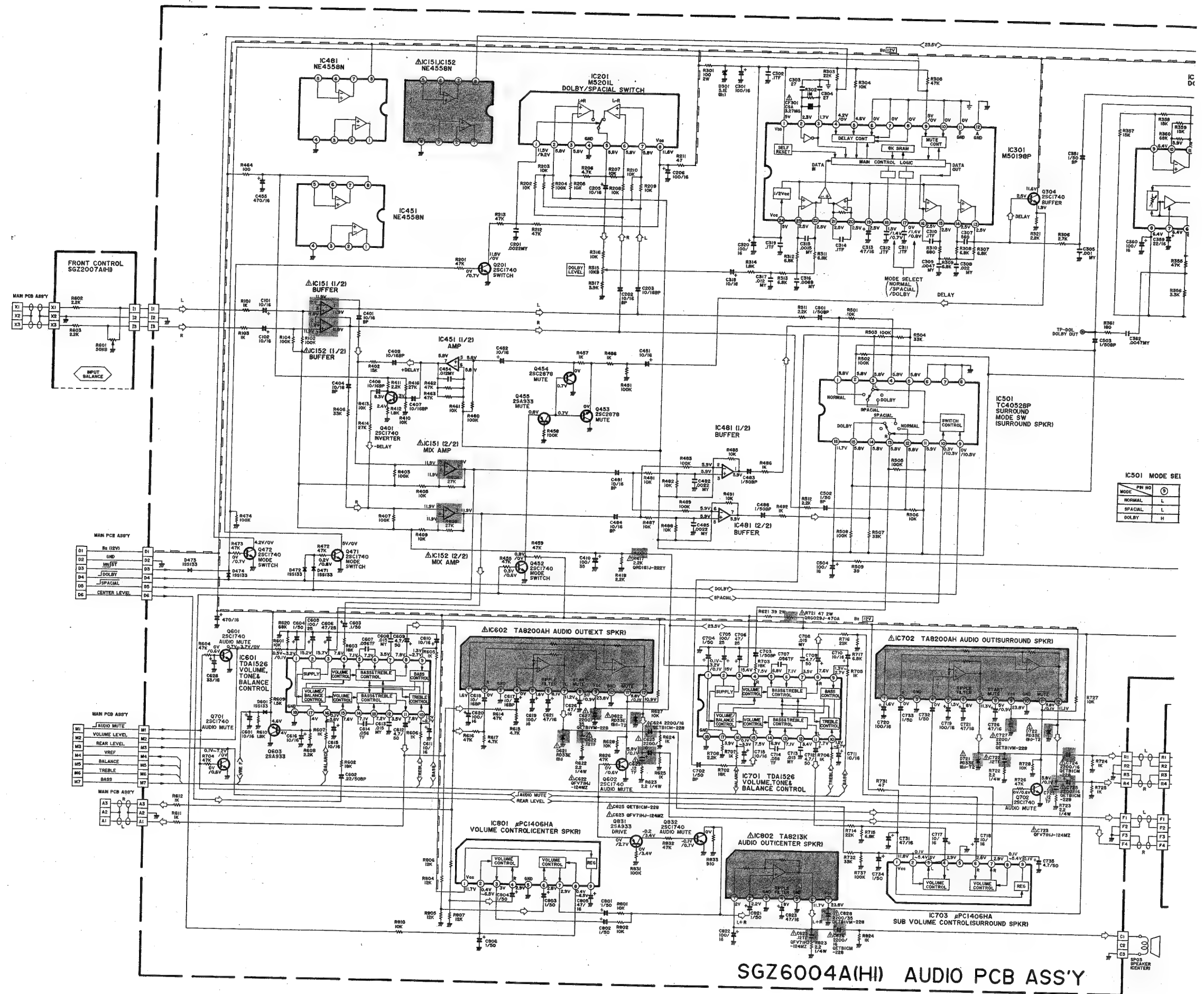


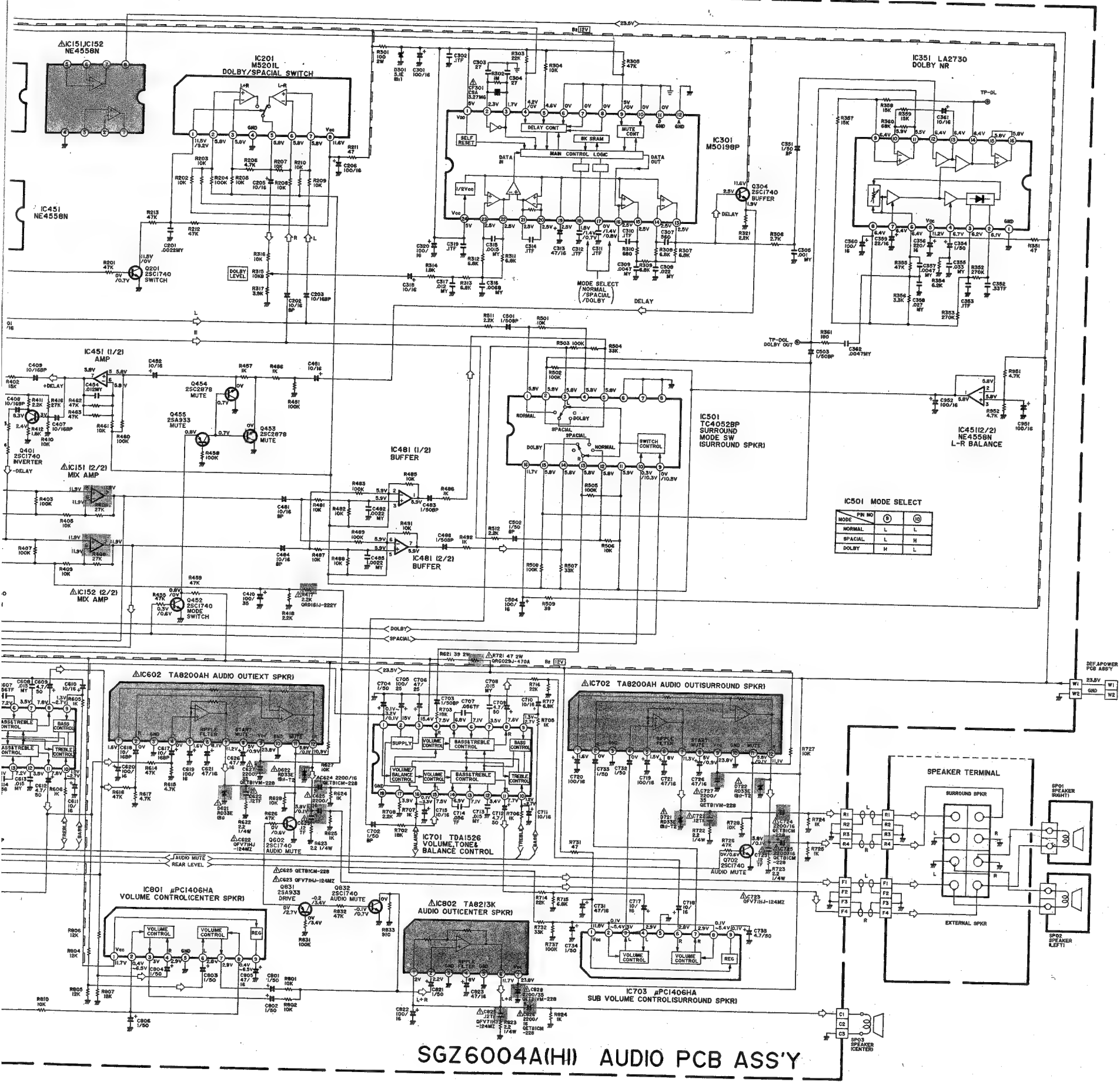










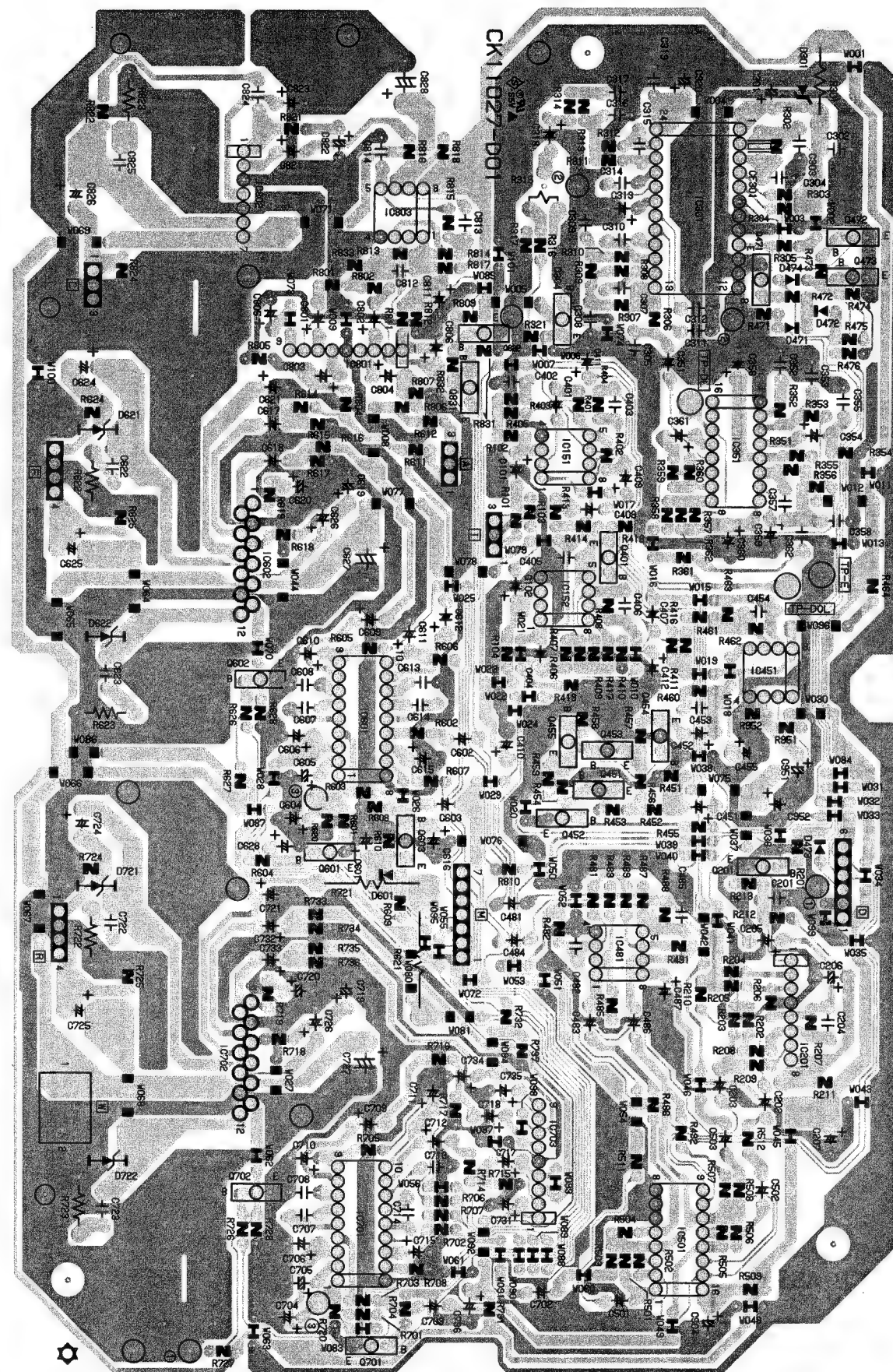


SGZ6004A(HI) AUDIO PCB ASS'Y

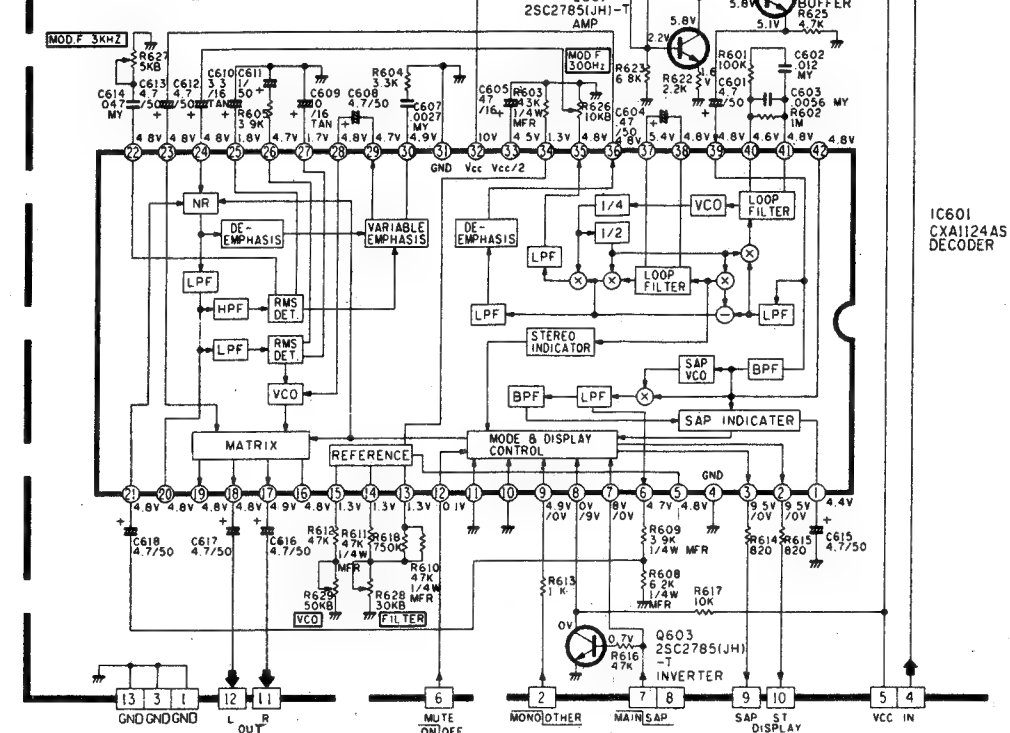


## AUDIO PCB BACK PATTERN

**TOP** 

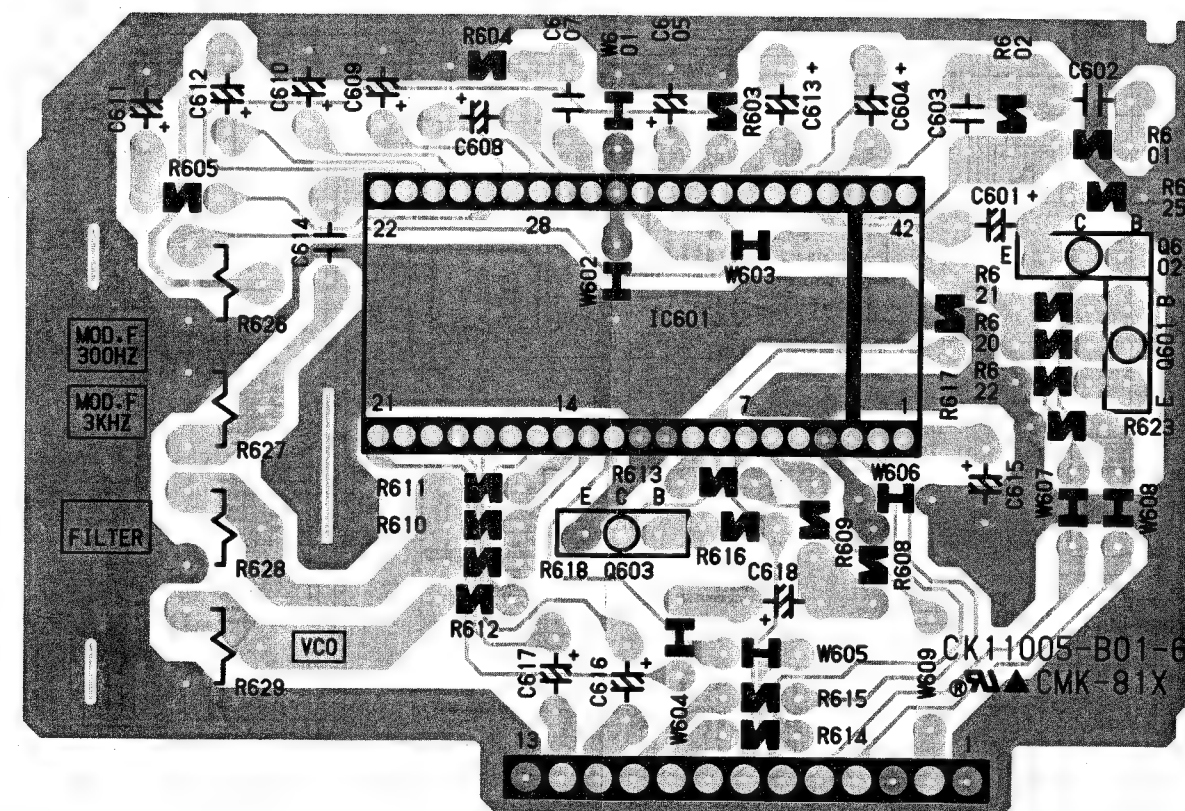


SX-6106A(H1)  
MTS PCB ASS'Y



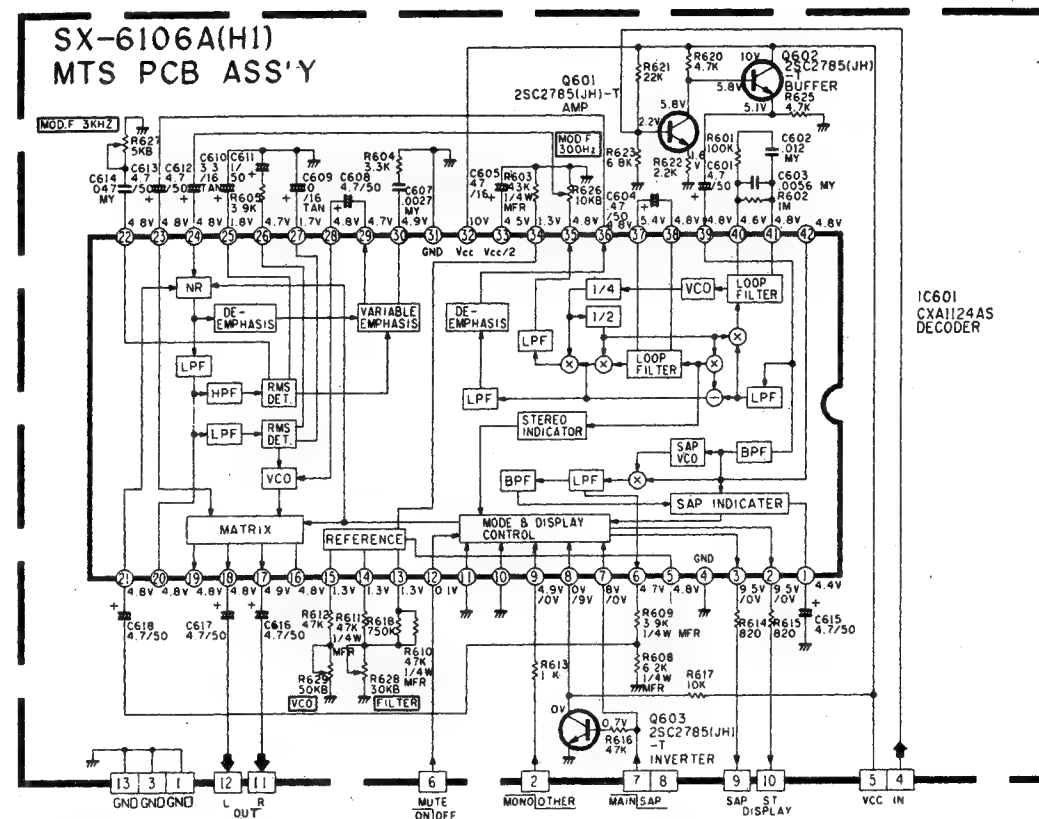
**MTS PCB BACK PATTERN**

**↑ TOP**

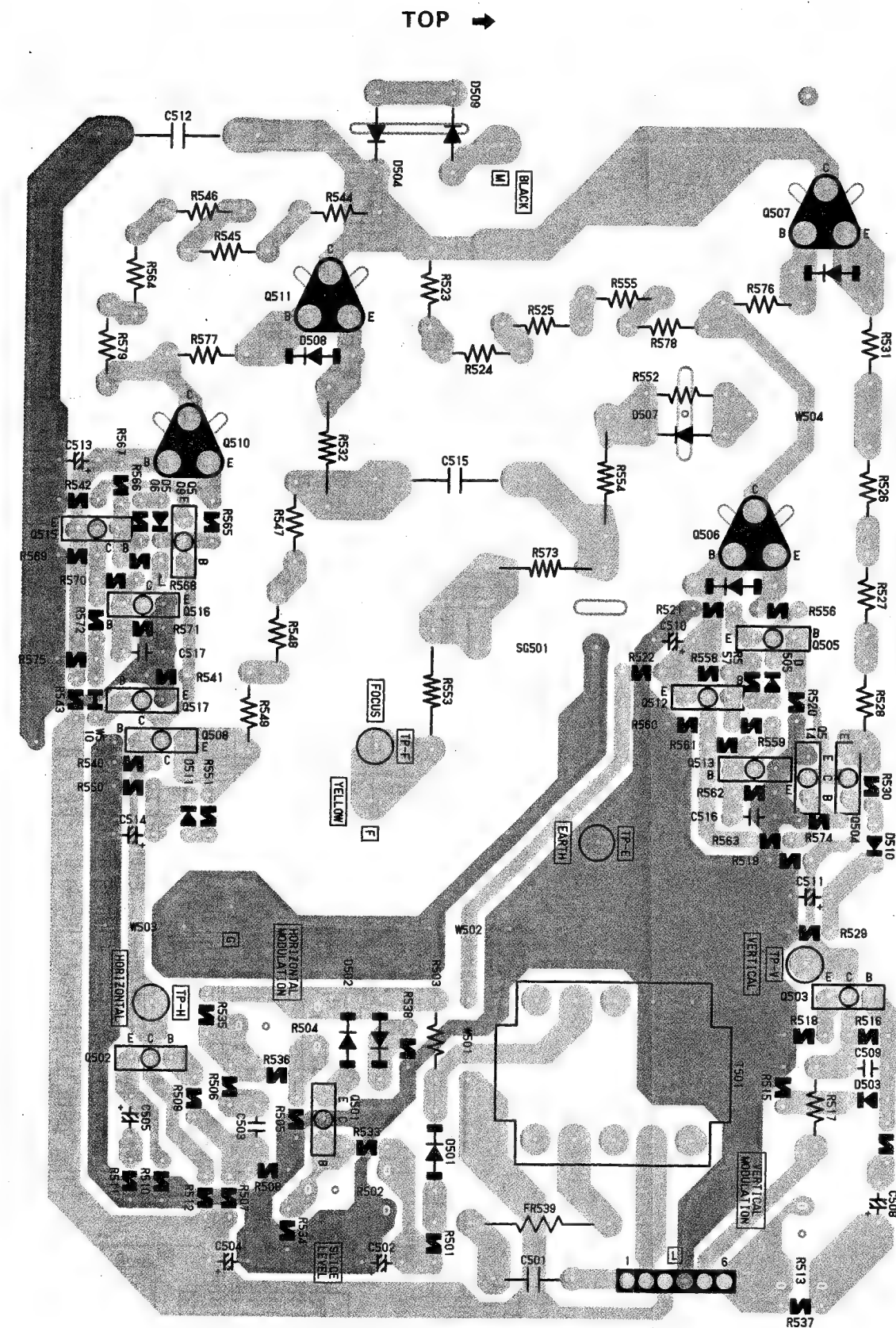
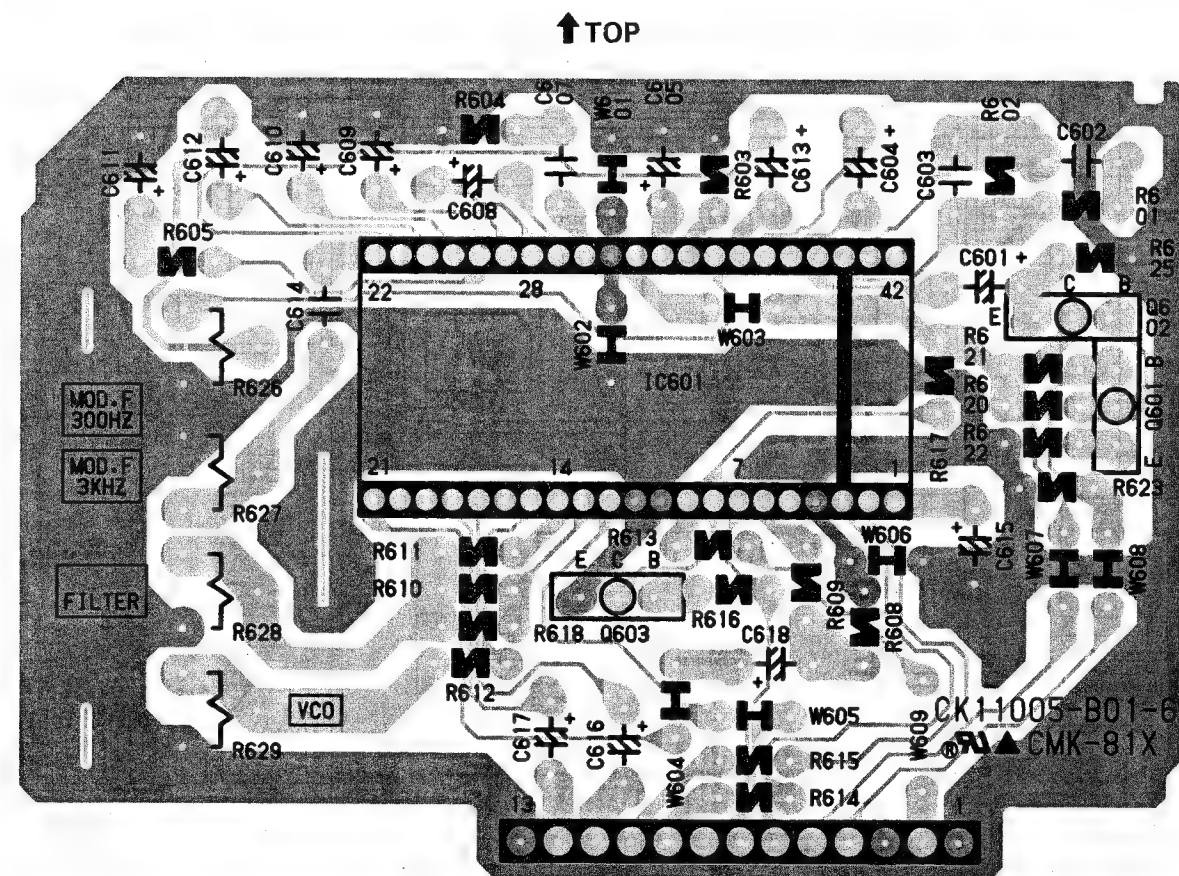




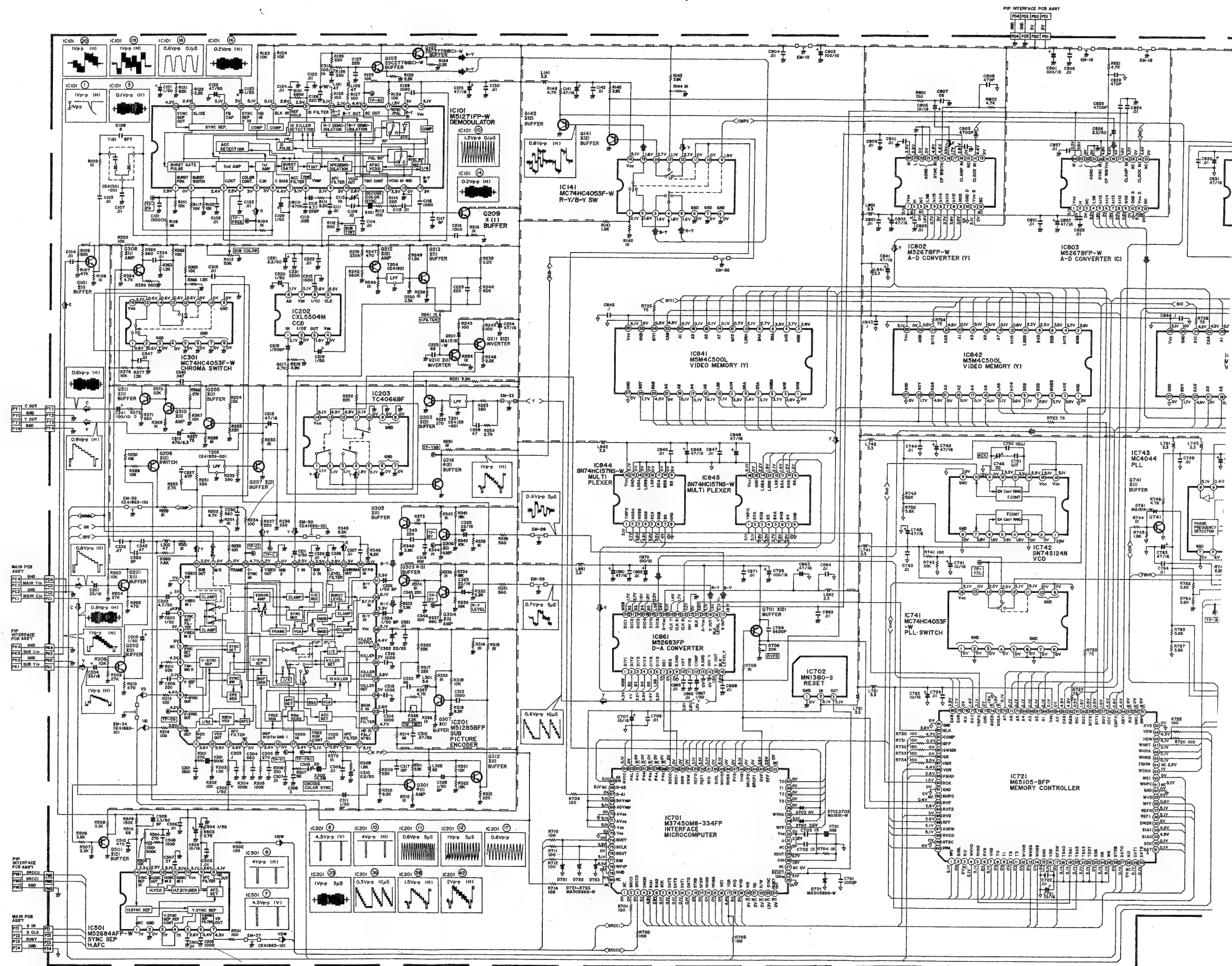
## DBF PCB BACK PATTERN

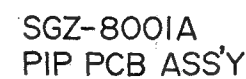


MTS PCB BACK PATTERN











PIP PCB PATTERN

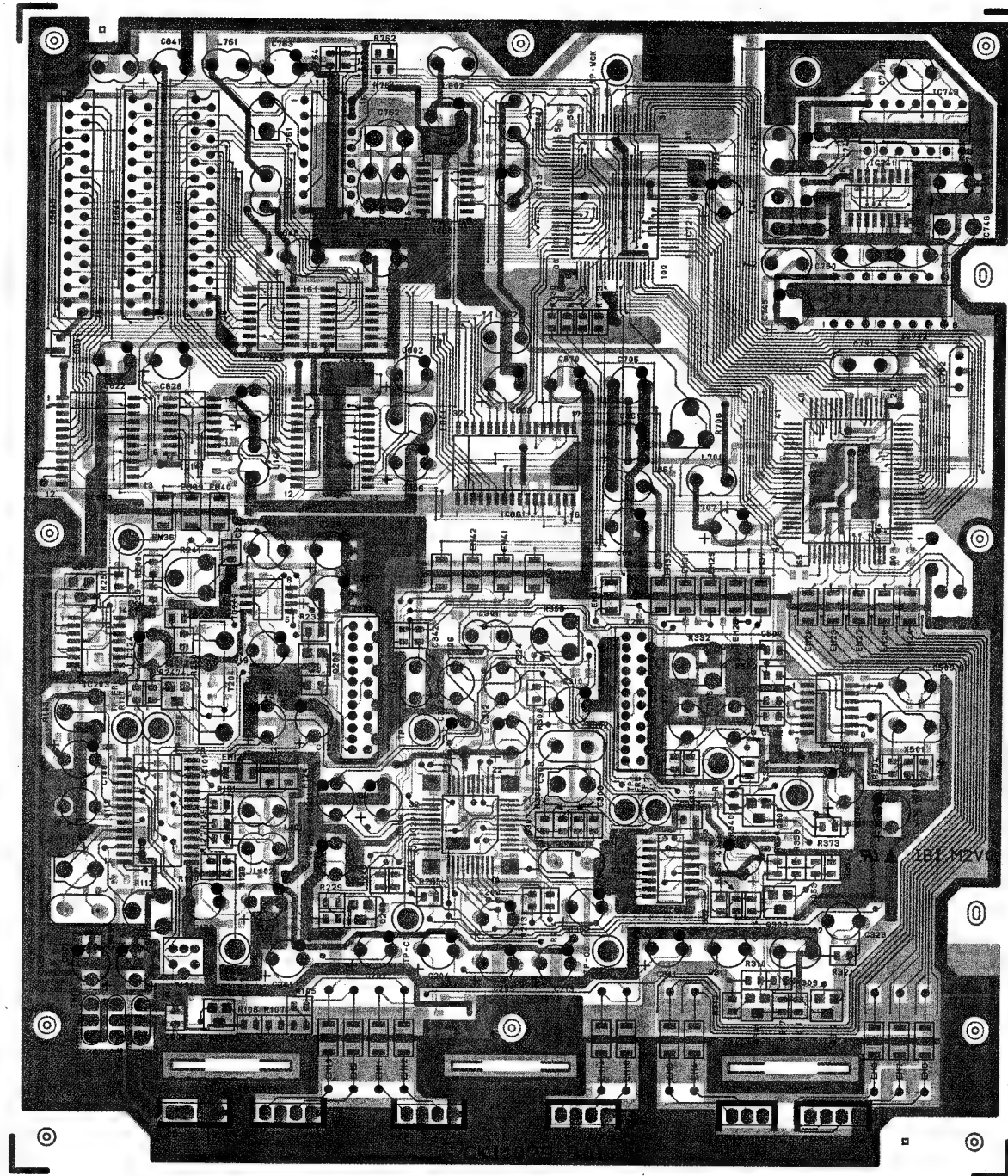
(A)

AV-3590S

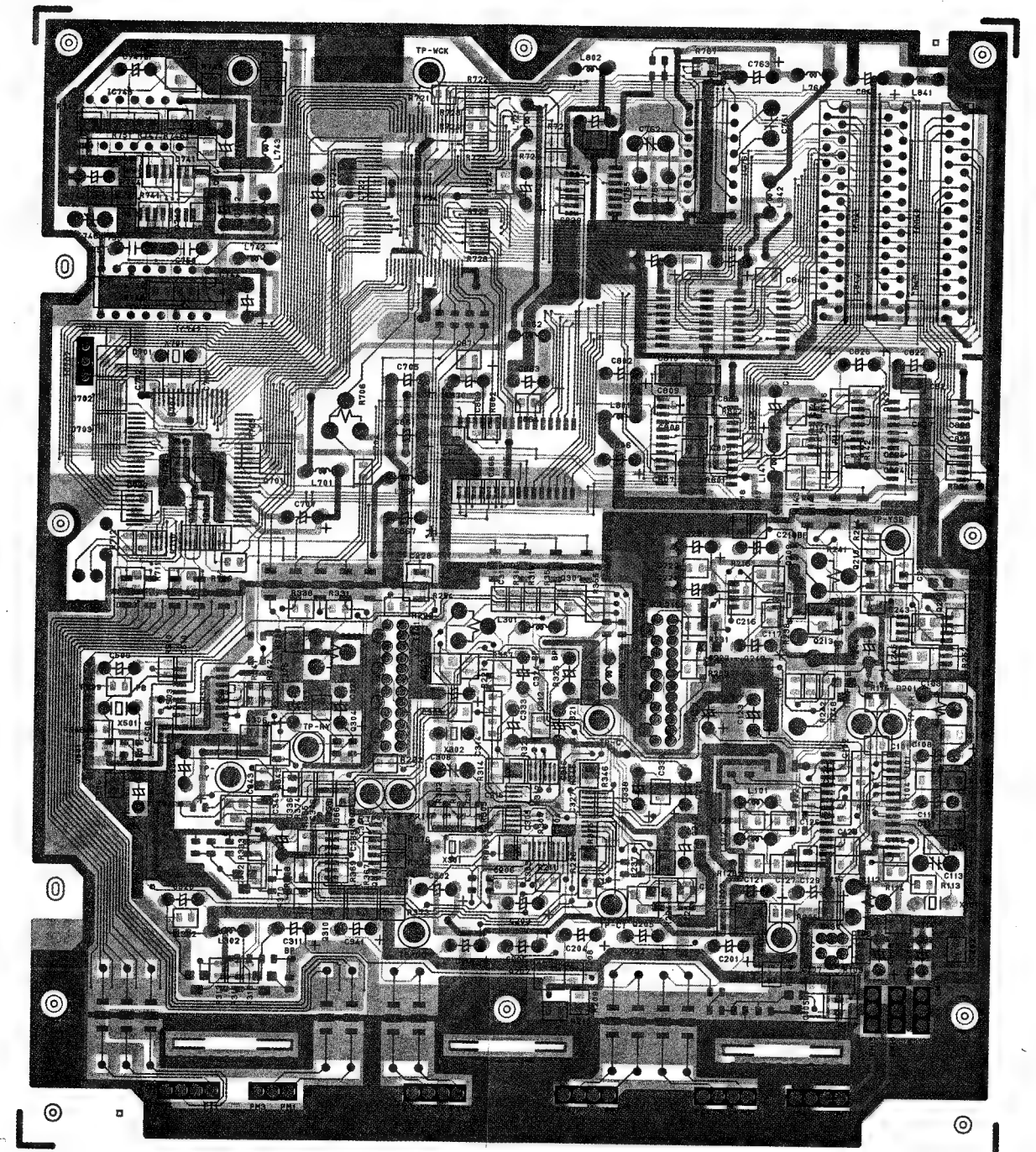
AV-3590S

(A)

→ TOP

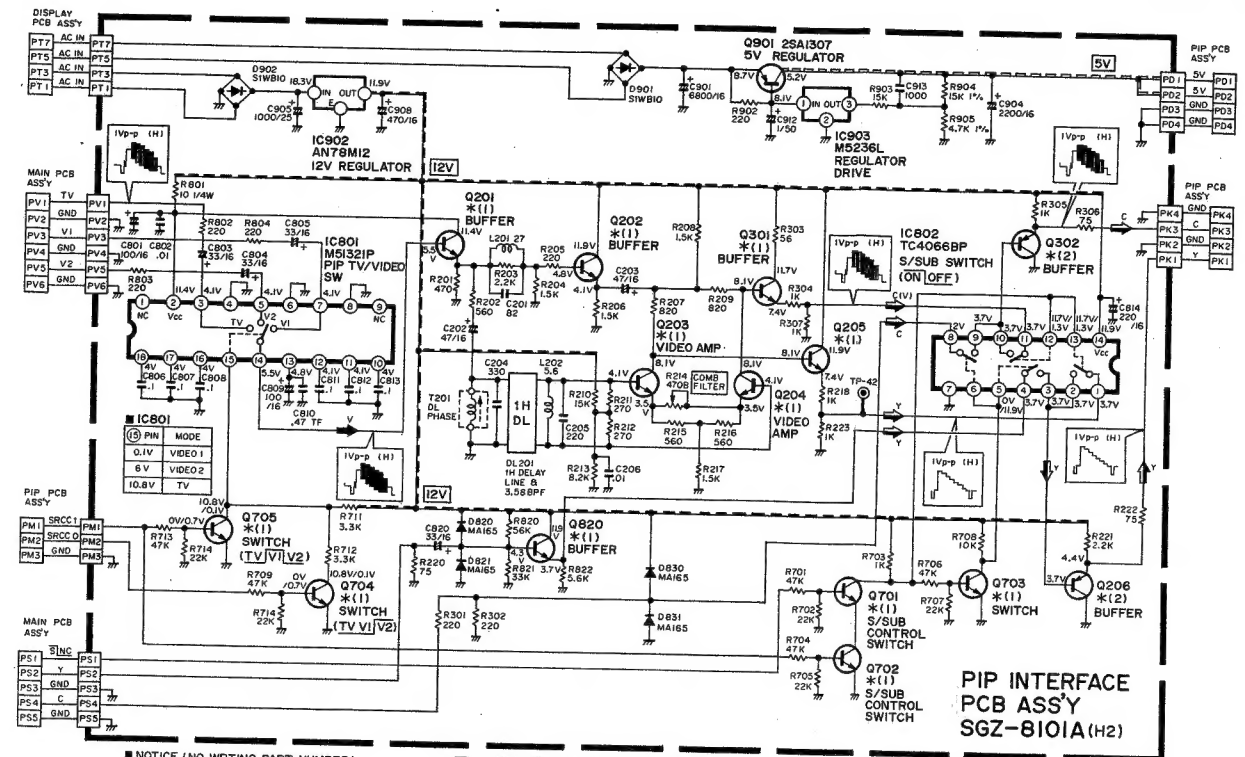
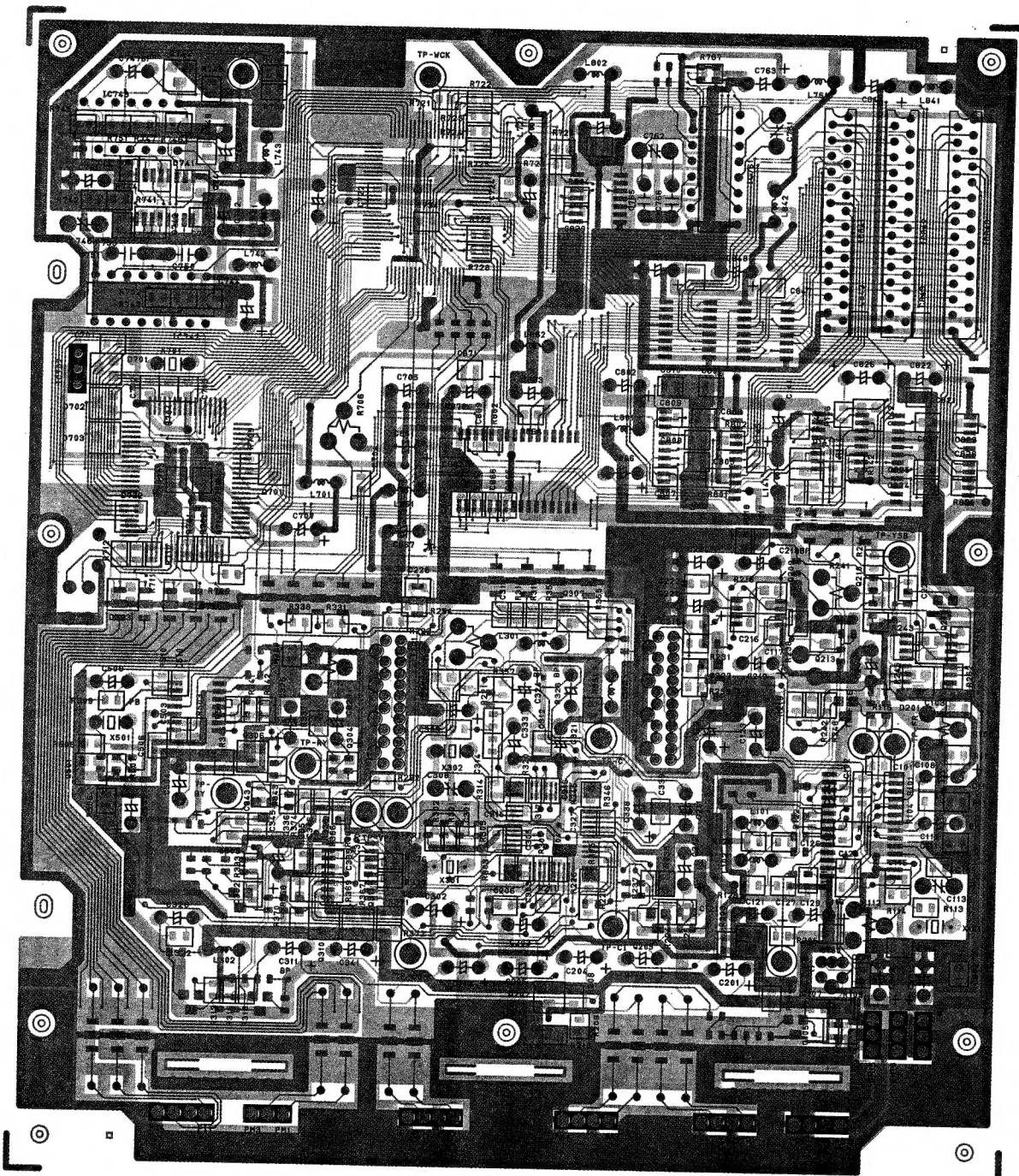


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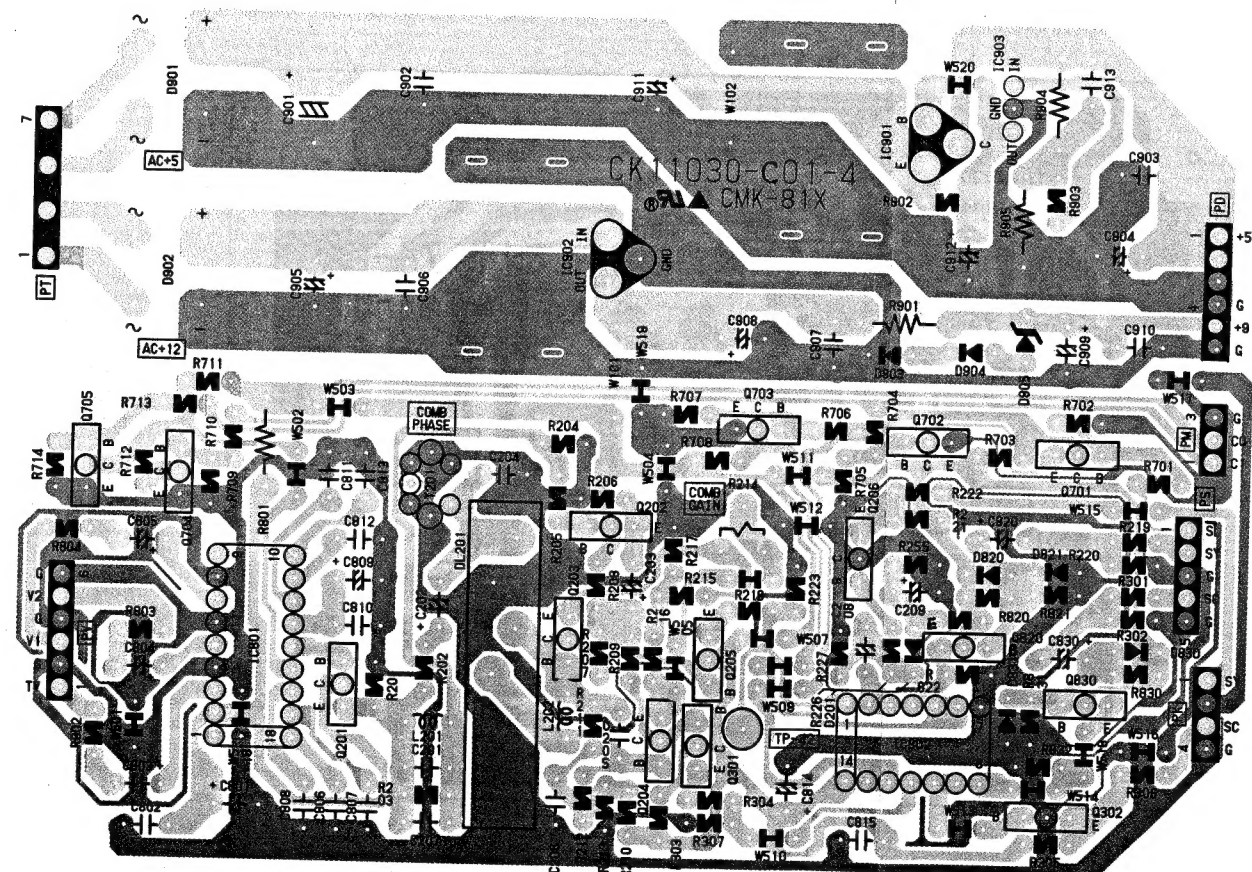


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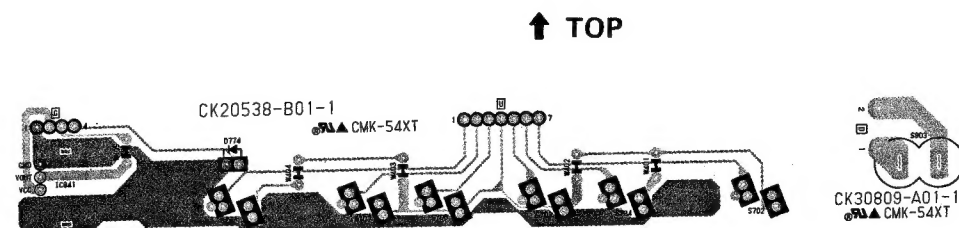


PIP INTERFACE PCB BACK PATTERN

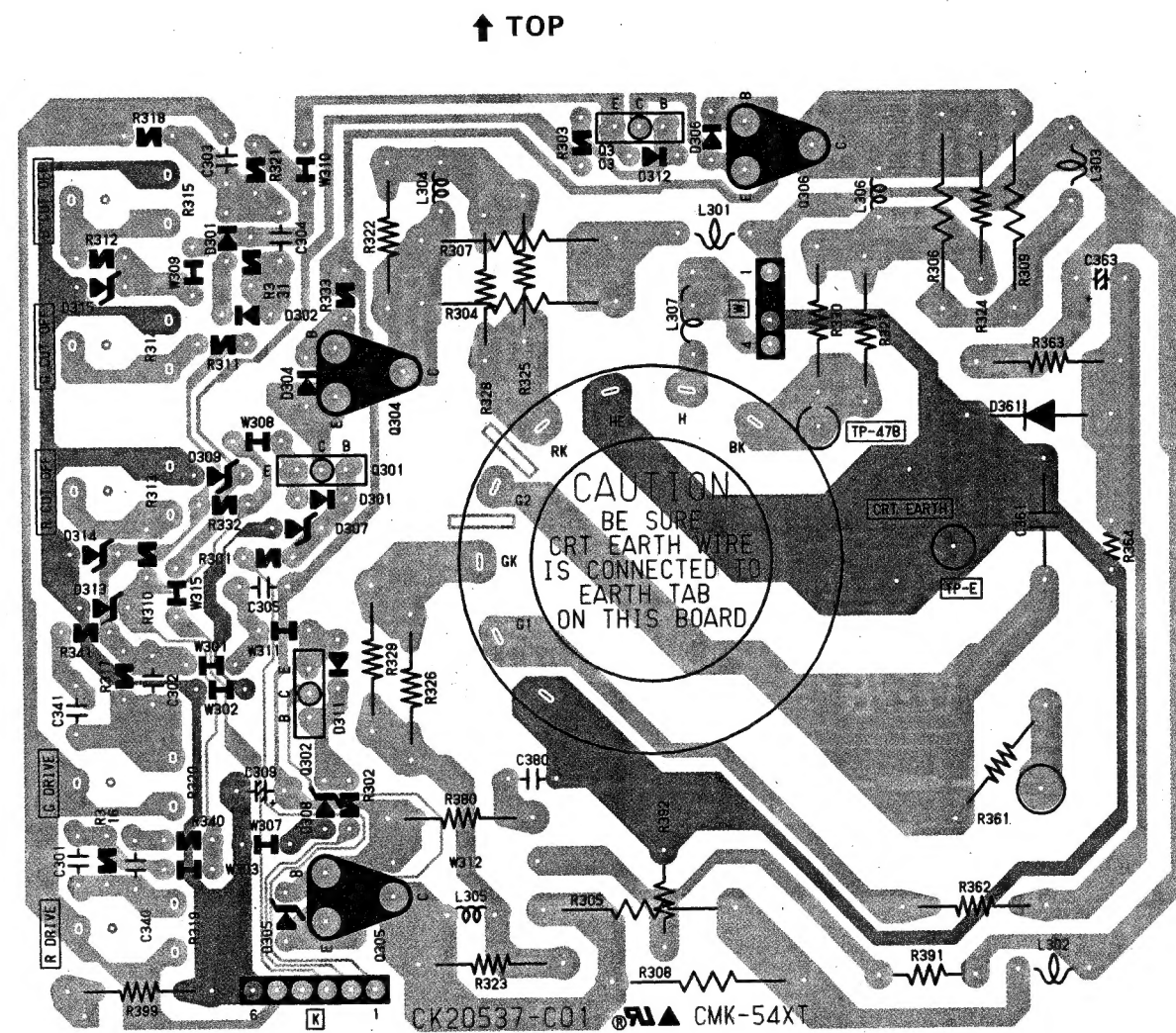
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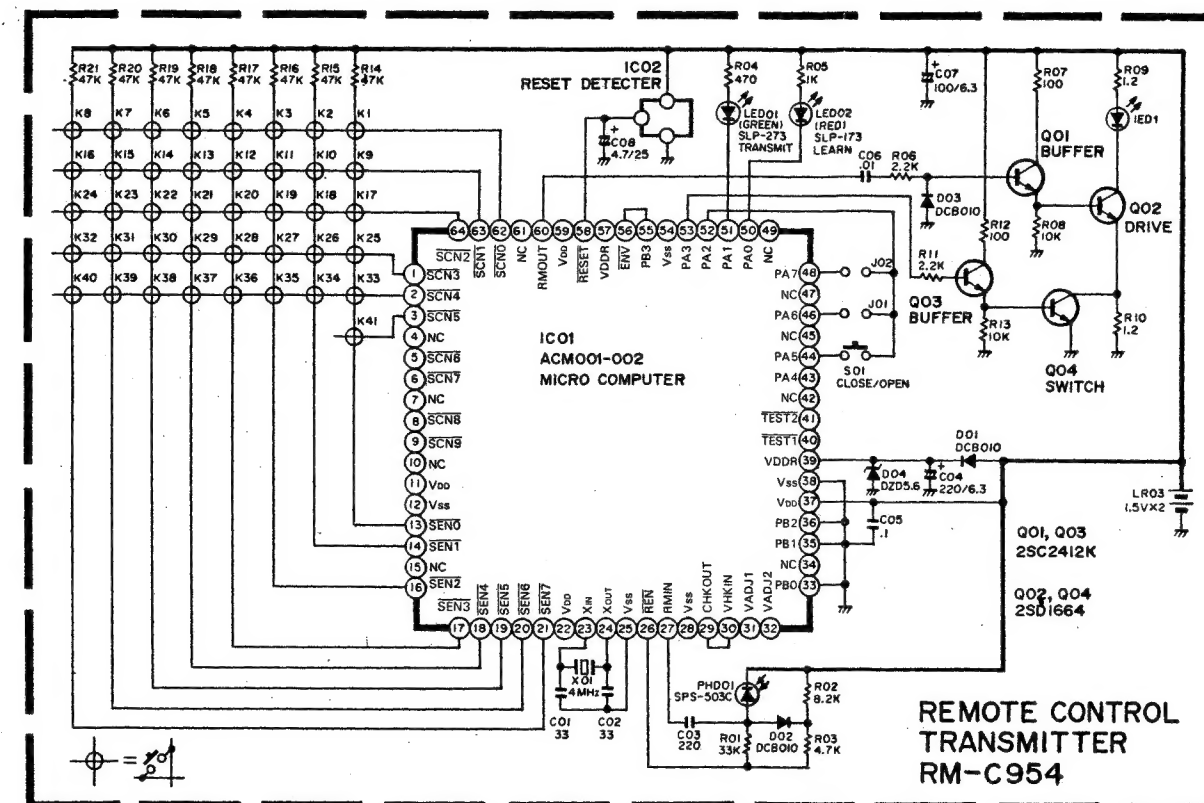
## CONTROL PCB BACK PATTERN



## CRT SOCKET PCB BACK PATTERN



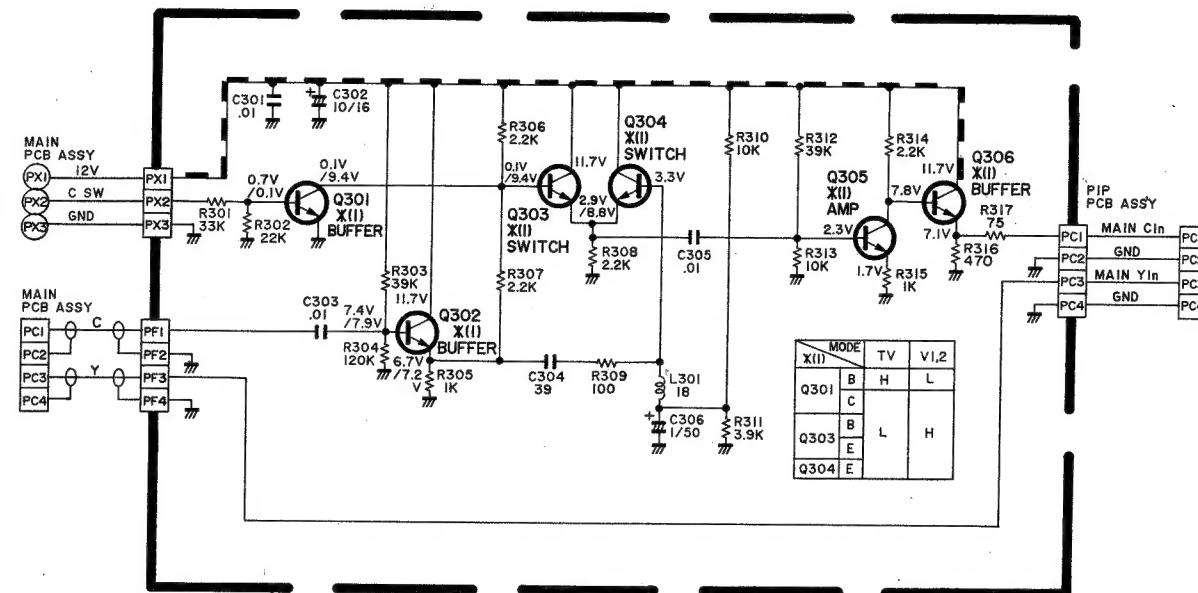
## REMOTE CONTROL TRANSMITTER RM-C954



## FUNCTION OF KEYS

KEY NO.	CLOSE(S01:ON)	OPEN(S01:OFF)	KEY NO.	CLOSE(S01:ON)	OPEN(S01:OFF)
K1	—	LEARN	K22	RETURN	J
K2	MENU	ANT/CABLE	K23	0	K
K3	—	SYSTEM-ON	K24	100 +	L
K4	POWER	SYSTEM-OFF	K25	—	CHANNEL - (VCR)
K5	SWAP	PIP SOURCE	K26	FUNCTION BACK	CHANNEL + (VCR)
K6	PIP	TV	K27	3	SURROUND
K7	—	VIDEO 1	K28	AV STATUS / RESET	POWER (VCR)
K8	DIGI. COM.MENU	VIDEO 2	K29	FUNCTION -	REW
K9	SPLIT	VNR	K30	FUNCTION FOWARD	STOP
K10	1	NOTCH	K31	FUNCTION +	FF
K11	2	MAIN / SAP	K32	DISPLAY	EJECT
K12	—	—	K33	—	REC
K13	RETRO PLAY	A	K34	—	PLAY
K14	4	B	K35	—	PAUSE / STILL
K15	5	C	K36	MUTE	MUTE
K16	6	D	K37	CHANNEL -	CHANNEL -
K17	FREEZE	E	K38	CHANNEL +	CHANNEL +
K18	7	F	K39	VOLUME -	VOLUME -
K19	8	G	K40	VOLUME +	VOLUME +
K20	9	H	K41	MEMORY CLEAR	MEMORY CLEAR
K21	OFF	I			



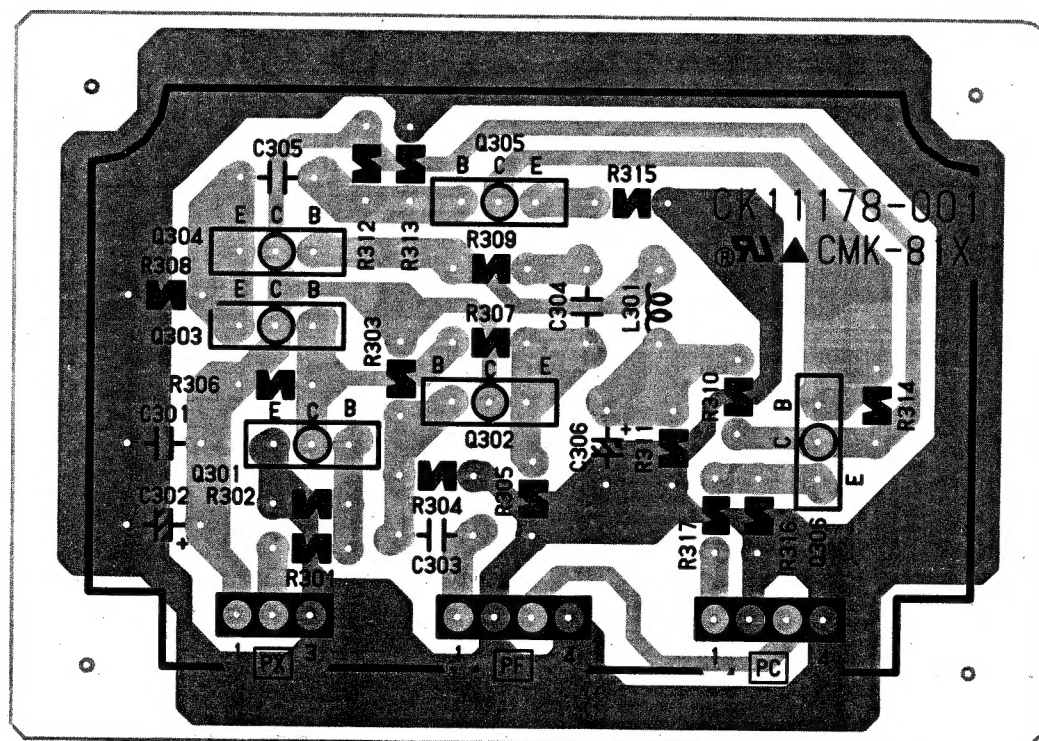


NOTE: NO WRITING PART NUMBER

MARK	KIND	PART NUMBER
X(1)	TRANSISTOR(NPN)	2SC2765(JHI)-T

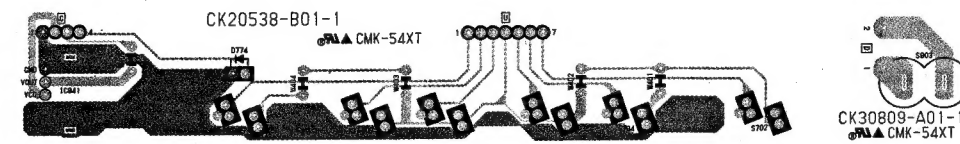
## TAKE OFF PCB BACK PATTERN

↑ TOP



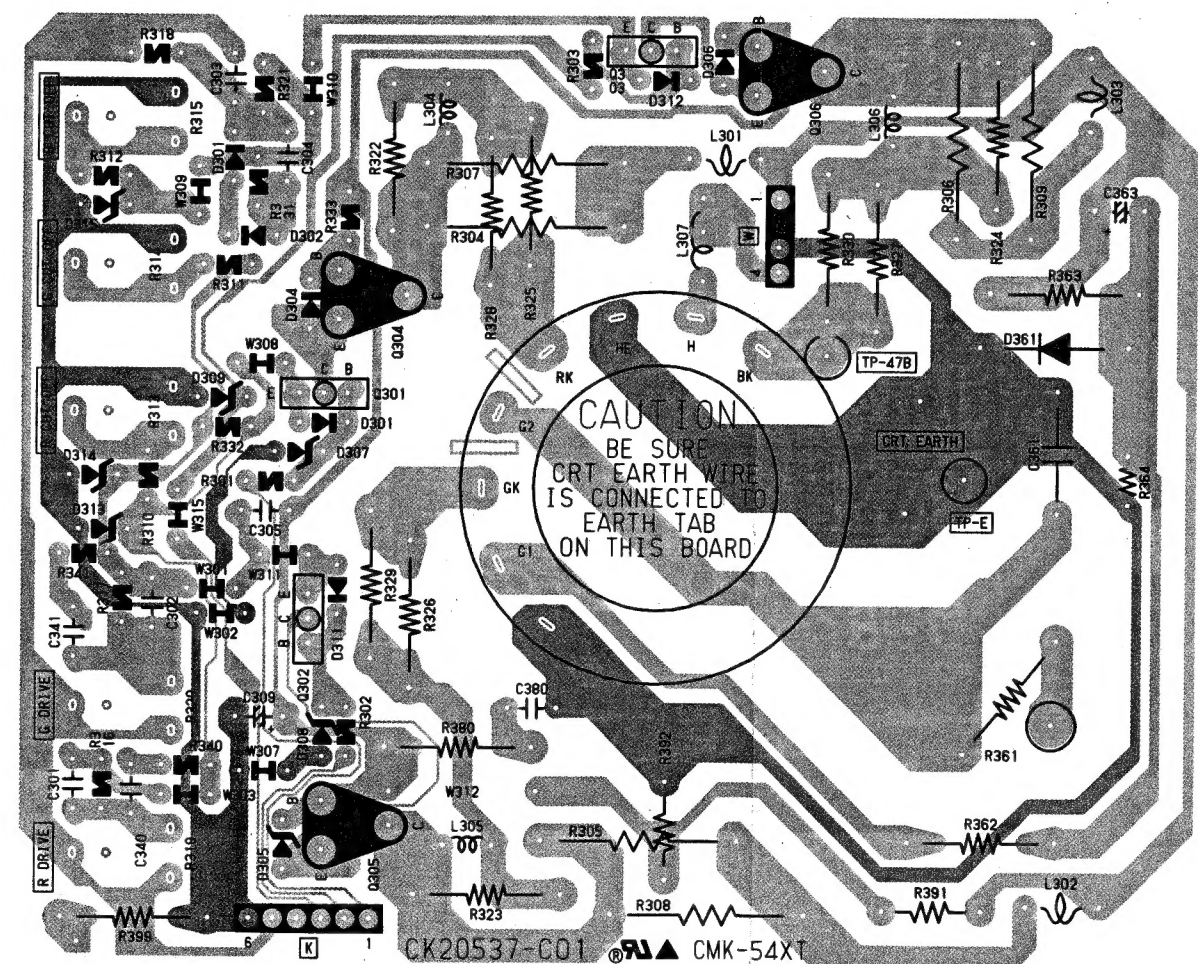
## CONTROL PCB BACK PATTERN

↑ TOP

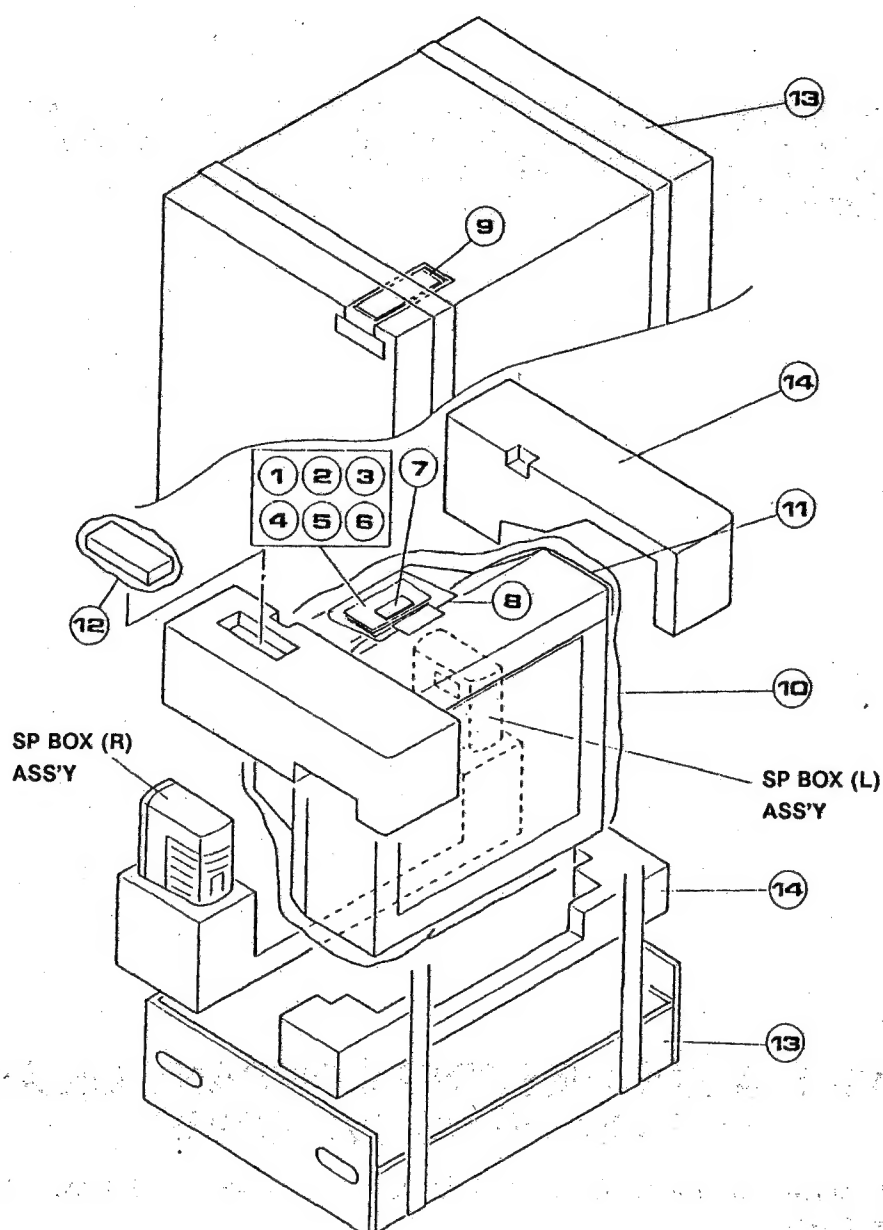


## CRT SOCKET PCB BACK PATTERN

↑ TOP



## PACKING



## PACKING PARTS LIST

SYMBOL NO.	PART NO.	PART NAME	REMARKS
1	CM21229-B01	SAFETY TIPS	
2	BT-20113A	WARRANTY CARD	
3	BT-20108A	SERVICE INF CARD	
4	AV3590S-US-IBA	INST BOOK	
5	CH42993-00C	SPEAKER CORD	
6	CM45697-A01	BOLT	
7	CM33827-00C	PURITY COMPASS	
8	CM30751-010	POLY BAG	
9	CM20926-00A-A	REC. KEEP. CARD	
10	CP30093-003-A	POLY BAG	*
11	CP30055-003-A	TOP COVER	*
12	RM-C954-KD	RC HAND PIECE	*
13	CP11017-00B-A	PACKING CASE	*
14	CP10780-A0A-A	CUSHION ASSY	*